STIC Search Report
EIC 1700

STIC Database Tracking Number: 155538

TO:	From:
Christina Ildebrando Location: 6C61 Art Unit : 1725 June 20, 2005 Case Serial Number: 10/675141	Kathleen Fuller Location: EIC 1700 REMSEN 4B28 Phone: 571/272-2505 Kathleen.Fuller@uspto.gov

Search Notes

The funtionalized silicates are not structurally searchable –much too broad description of them. Therefore I searched using the starting materials in the application as indexed by CA and in the claims and combined this with "funtionalized zeolite". If you have questions please call me.

STIC Search Results Feedback Form

EIC17000

Questions about the scope or the results of the search? Contact ***the EIC searcher or contact:***

Kathleen Fuller, EIC 1700 Team Leader
571/272-2505 REMSEN 4B28

Voluntary Results Feedback Form

- *I am an examiner in Workgroup:* ☐ *Example: 1713*
- *Relevant prior art **found**, search results used as follows:*
  - ☐ 102 rejection
  - ☐ 103 rejection
  - ☐ Cited as being of interest.
  - ☐ Helped examiner better understand the invention.
  - ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
  (journal articles, conference proceedings, new product announcements etc.)

- *Relevant prior art **not found:***
  - ☐ Results verified the lack of relevant prior art (helped determine patentability).
  - ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to EIC1700 REMSEN 4B28

STIC CDB Search Request Form 155588

Request a Search

Search requests relating to published applications, patent families, and litigation may be submitted by filling out this form and clicking on "Send."

For all other search requests, fill out the form, print, and submit the printout with any attachments to the STIC facility serving your Technology Center.

SCIENTIFIC REFERENCE BR
Sci & Tech Inf - Cnt
JUN 6 RECD
Pat. & T.M. Office

Tech Center:

○ TC 1600 ◉ TC 1700 ○ TC 2100 ○ TC 2600 ○ TC 2800
○ TC2900 ○ TC 3600 ○ TC 3700 ○ Law Lib ○ Other

Enter your Contact Information below:

Name: Christina Johnson
Employee Number: 77266 Phone: 571-272-1176
Art Unit or Office: 1725 Building & Room Number: REM 6C-61

Enter the case serial number (Required): 10/675141
If not related to a patent application, please enter NA here.

Class / Subclass(es) 502/60, 62, 64, 71, 77, 78, 79

Earliest Priority Filing Date: 9/30/03

Format preferred for results:
☑ *Paper* ☐ *Diskette* ☐ *E-mail*

Provide detailed information on your search topic:

- In your own words, describe in detail the concepts or subjects you want us to search.
- Include synonyms, keywords, and acronyms. Define terms that have special meanings.
- *For Chemical Structure Searches Only*
  Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers
- *For Sequence Searches Only*

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Include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

- *For Foreign Patent Family Searches Only*
  Include the country name and patent number.
- Provide examples or give us relevant citations, authors, etc., if known.
- FAX or send the **abstract, pertinent claims** (not all of the claims), **drawings, or chemical structures** to your EIC or branch library.

Enter your Search Topic Information below:

Please search the structural units, formulae, and compounds detailed in claims 1-36 in combination with a zeolite. Applicant is claiming a functionalized zeolite and not the compounds per se.
Attached are the claims and abstract.

Special Instructions and Other Comments:
(For fastest service, let us know the best times to contact you, in case the searcher needs further clarification on your search.)

Press ALT + F, then P to print this screen for your own information.

SEND RESET

=> FILE REG
FILE 'REGISTRY' ENTERED AT 12:33:23 ON 20 JUN 2005
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

Property values tagged with IC are from the ZIC/VINITI data file
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STRUCTURE FILE UPDATES: 19 JUN 2005 HIGHEST RN 852520-85-5
DICTIONARY FILE UPDATES: 19 JUN 2005 HIGHEST RN 852520-85-5

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 18, 2005

Please note that search-term pricing does apply when
conducting SmartSELECT searches.

****
*
* The CA roles and document type information have been removed from *
* the IDE default display format and the ED field has been added, *
* effective March 20, 2005. A new display format, IDERL, is now *
* available and contains the CA role and document type information. *
*
****

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more
information enter HELP PROP at an arrow prompt in the file or refer
to the file summary sheet on the web at:
http://www.cas.org/ONLINE/DBSS/registryss.html

=> FILE HCAPLU
FILE 'HCAPLUS' ENTERED AT 12:33:28 ON 20 JUN 2005
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

FILE COVERS 1907 - 20 Jun 2005 VOL 142 ISS 26
FILE LAST UPDATED: 19 Jun 2005 (20050619/ED)

New CAS Information Use Policies, enter HELP USAGETERMS for details.

This file contains CAS Registry Numbers for easy and accurate
substance identification.

KATHLEEN FULLER EIC 1700 REMSON 4B28 571/272-2505

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L2          69 SEA FILE=REGISTRY ABB=ON  (102-04-5/BI OR 105-67-9/BI OR
               106-44-5/BI OR 106-48-9/BI OR 106-51-4/BI OR 108-10-1/BI OR
               108-39-4/BI OR 108-43-0/BI OR 108-94-1/BI OR 108-95-2/BI OR
               1119-94-4/BI OR 119-61-9/BI OR 1197-34-8/BI OR 120-92-3/BI OR
               12026-57-2/BI OR 12027-12-2/BI OR 12027-38-2/BI OR 123-54-6/BI
               OR 128-39-2/BI OR 13242-21-2/BI OR 1343-93-7/BI OR 135-19-3/BI
               OR 150-19-6/BI OR 1687-64-5/BI OR 18267-08-8/BI OR 2269-22-9/BI
                OR 23519-77-9/BI OR 2416-94-6/BI OR 2417-10-9/BI OR 28469-78-5
               /BI OR 28994-41-4/BI OR 3085-30-1/BI OR 367-12-4/BI OR
               4073-85-2/BI OR 4420-74-0/BI OR 486-25-9/BI OR 497-38-1/BI OR
               527-35-5/BI OR 555-31-7/BI OR 555-75-9/BI OR 556-91-2/BI OR
               563-80-4/BI OR 57-09-0/BI OR 576-26-1/BI OR 611-99-4/BI OR
               67-64-1/BI OR 70942-24-4/BI OR 75-59-2/BI OR 7631-86-9/BI OR
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               90-43-7/BI OR 93-55-0/BI OR 95-48-7/BI OR 95-56-7/BI OR
               95-57-8/BI OR 96-22-0/BI OR 98-86-2/BI OR 99-93-4/BI)
L6          48 SEA FILE=REGISTRY ABB=ON  ZEOLITE
L9      109703 SEA FILE=HCAPLUS ABB=ON  L6 OR ?ZEOLITE?
L10      24998 SEA FILE=REGISTRY ABB=ON  SILICATE
L11     158012 SEA FILE=HCAPLUS ABB=ON  L10
L20        251 SEA FILE=HCAPLUS ABB=ON  (L11 OR L9)(5A)FUNCTIONALI?
L21        162 SEA FILE=HCAPLUS ABB=ON  L20 AND ZEOLITE?/IT
L26         22 SEA FILE=REGISTRY ABB=ON  L2 AND ONE
L27         42 SEA FILE=REGISTRY ABB=ON  L2 AND OL
L28         14 SEA FILE=REGISTRY ABB=ON  L27 AND 1-2/SI,AL,ZR,N
L29         28 SEA FILE=REGISTRY ABB=ON  L27 NOT L28
L30         23 SEA FILE=REGISTRY ABB=ON  L2 NOT (L26 OR L29)
L31         23 SEA FILE=REGISTRY ABB=ON  L28 OR L30
L33          4 SEA FILE=REGISTRY ABB=ON  L31 AND SILICA?
L34          1 SEA FILE=REGISTRY ABB=ON  L33 AND O2SI/MF
L35         22 SEA FILE=REGISTRY ABB=ON  L31 NOT L34
L36          2 SEA FILE=REGISTRY ABB=ON  L35 AND 1/SI AND SULFONIC
L37         20 SEA FILE=REGISTRY ABB=ON  L35 NOT L36
L38          1 SEA FILE=REGISTRY ABB=ON  "TETRAETHYL ORTHOTITANATE"/CN
L39          1 SEA FILE=REGISTRY ABB=ON  "TETRAMETHYL ORTHOTITANATE"/CN
L40          1 SEA FILE=REGISTRY ABB=ON  "TETRAISOPROPYL ORTHOTITANATE"/CN
L47          4 SEA FILE=REGISTRY ABB=ON  C3H8O.1/3AL/MF
L48          2 SEA FILE=REGISTRY ABB=ON  CH4O.1/3AL/MF
L49          1 SEA FILE=REGISTRY ABB=ON  C2H6O.1/3AL/MF
L50          6 SEA FILE=REGISTRY ABB=ON  C4H10O.1/3AL/MF
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L54          1 SEA FILE=REGISTRY ABB=ON  C2H6O.1/4ZR/MF
L56          1 SEA FILE=REGISTRY ABB=ON  C6H6O.1/4ZR/MF
L57         24 SEA FILE=REGISTRY ABB=ON  (L38 OR L39 OR L40) OR (L47 OR L48
               OR L49 OR L50 OR L51 OR L52 OR L53 OR L54) OR L56
L58          4 SEA FILE=HCAPLUS ABB=ON  L21 AND L57
L59          1 SEA FILE=HCAPLUS ABB=ON  L21 AND  L36
L60      52473 SEA FILE=HCAPLUS ABB=ON  L37
L63         22 SEA FILE=HCAPLUS ABB=ON  L60(L)FUNCTIONAL?(L)ZEOLITE?
L64         24 SEA FILE=HCAPLUS ABB=ON  L58 OR L59 OR L63

=> D L64 BIB ABS IND HITSTR 1-24

L64  ANSWER 1 OF 24  HCAPLUS  COPYRIGHT 2005 ACS on STN
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AN 2005:284113 HCAPLUS
DN 142:336779
TI **Functionalized zeolite** compositions, their preparation and use
IN Kishan, Gurram; Vetrivel, Rajappan; Kukalyekar, Nileshkumar Prakash; Dhalla, Adil Minoo; Male, Jonathan L.; Spivack, James L.; Ramaswamy, Arumugamangalam Venkataraman; Singh, Anand Pal
PA India
SO U.S. Pat. Appl. Publ., 15 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 2005070423	A1	20050331	US 2003-675141	20030930
WO 2005035119	A2	20050421	WO 2004-US24560	20040729

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRAI US 2003-675141 A 20030930

AB Zeolite compns. comprise structural units of silicate, R1SB modified silicate, and R2O3SC modified silicate, where B and C are spacer groups comprising C2 to C20 hydrocarbyl groups; R1 and R2 = alkali metal, H, or C1-20 alkyl groups. The zeolite compns. further comprise structural units derived from a heteropolyacid compound (M3)3(M4)(M5)12O40; where M3 = H or an alkali metal; M4 = P or Si, and M5 = W or Mo. Zeolite treated with tetra-Et orthosilicate and (3-mercaptopropyl)trimethoxysilane and cetyltrimethylammonium bromide resulted in selectivity to bisphenol A (96%), in phenol/acetone condensation. The zeolite compns. are useful as catalysts for producing bisphenols.

IC ICM B01J029-04
INCL 502064000
CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 67
ST mercapto sulfonic **functionalized zeolite** catalyst bisphenol A manuf
IT Condensation reaction catalysts
(**functionalized zeolite** catalyst compns. for bisphenol manufacture)
IT Chabazite-type **zeolites**
Faujasite-type **zeolites**
Ferrierite-type **zeolites**
L **zeolites**
Mordenite-type **zeolites**
Zeolite MCM-41
Zeolite ZSM-5
Zeolites (synthetic), uses
RL: CAT (Catalyst use); USES (Uses)
(**functionalized zeolite** catalyst compns. for bisphenol manufacture)
IT 80-05-7P, Bisphenol A, preparation

RL: IMF (Industrial manufacture); PREP (Preparation)
(**functionalized zeolite** catalyst compns. for bisphenol manufacture)

IT **57-09-0**, Cetyltrimethylammonium bromide **75-59-2**, Tetramethylammonium hydroxide **78-10-4**, Tetraethyl orthosilicate **1119-94-4**, Dodecyltrimethylammonium bromide **1343-93-7**, Phosphotungstic acid **4420-74-0**, (3-Mercaptopropyl)trimethoxysilane **12026-57-2**, Phosphomolybdic acid **12027-12-2**, Silicomolybdic acid **12027-38-2**, Silicotungstic acid **70942-24-4 79059-66-8**
RL: RCT (Reactant); RACT (Reactant or reagent)
(**functionalized zeolite** catalyst compns. for bisphenol manufacture)

IT 7631-86-9, SBA-15, uses
RL: CAT (Catalyst use); USES (Uses)
(mesoporous; **functionalized zeolite** catalyst compns. for bisphenol manufacture)

IT 67-64-1, Acetone, reactions 78-93-3, Methyl ethyl ketone, reactions 82-86-0, Acenaphthenequinone 83-33-0, Indanone 84-65-1, Anthraquinone 87-65-0, 2,6-Dichlorophenol 88-18-6, 2-tert-Butylphenol 90-15-3, 1-Naphthol 90-43-7, 2-Phenylphenol 93-55-0, Ethyl phenyl ketone 95-48-7, 2-Cresol, reactions 95-56-7, 2-Bromophenol 95-57-8, 2-Chlorophenol 96-22-0, Diethyl ketone 98-86-2, Acetophenone, reactions 99-93-4 102-04-5, Benzyl ketone 105-67-9, 2,4-Dimethylphenol 106-44-5, 4-Cresol, reactions 106-48-9, 4-Chlorophenol 106-51-4, Quinone, reactions 108-10-1, Methyl isobutyl ketone 108-39-4, reactions 108-43-0, 3-Chlorophenol 108-94-1, Cyclohexanone, reactions 108-95-2, Phenol, reactions 119-61-9, Benzophenone, reactions 120-92-3, Cyclopentanone 123-54-6, Acetylacetone, reactions 128-39-2, 2,6-Di-tert-butylphenol 135-19-3, 2-Naphthol, reactions 150-19-6, 3-Methoxyphenol 367-12-4, 2-Fluorophenol 486-25-9, Fluorenone 497-38-1, Bicyclo[2.2.1]heptan-2-one 527-35-5, 2,3,5,6-Tetramethylphenol 563-80-4, Methyl isopropyl ketone 576-26-1, 2,6-Xylenol 611-99-4, 4,4'-Dihydroxybenzophenone 873-94-9, 3,3,5-Trimethylcyclohexanone 1197-34-8, 3,5-Diethylphenol 1687-64-5, 2-Ethyl-6-methylphenol 2416-94-6, 2,3,6-Trimethylphenol 2417-10-9, 2-Phenoxyphenol 28994-41-4, 2-Benzylphenol
RL: RCT (Reactant); RACT (Reactant or reagent)
(starting material; **functionalized zeolite** catalyst compns. for bisphenol manufacture)

IT **555-31-7**, Tri(isopropyl)aluminate **555-75-9** **556-91-2 865-31-6 2269-22-9 3085-30-1** **4073-85-2 13242-21-2 18267-08-8**, Tetraethyl zirconate **23519-77-9**, Tetrapropyl zirconate **28469-78-5**
RL: RCT (Reactant); RACT (Reactant or reagent)
(**zeolite** precursors; **functionalized zeolite** catalyst compns. for bisphenol manufacture)

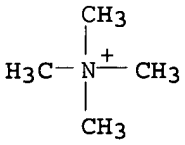
IT **57-09-0**, Cetyltrimethylammonium bromide **75-59-2**, Tetramethylammonium hydroxide **78-10-4**, Tetraethyl orthosilicate **1119-94-4**, Dodecyltrimethylammonium bromide **1343-93-7**, Phosphotungstic acid **4420-74-0**, (3-Mercaptopropyl)trimethoxysilane **12026-57-2**, Phosphomolybdic acid **12027-12-2**, Silicomolybdic acid **12027-38-2**, Silicotungstic acid **70942-24-4 79059-66-8**
RL: RCT (Reactant); RACT (Reactant or reagent)
(**functionalized zeolite** catalyst compns. for bisphenol manufacture)

RN 57-09-0 HCAPLUS
CN 1-Hexadecanaminium, N,N,N-trimethyl-, bromide (9CI) (CA INDEX NAME)

$Me_3{}^+N-(CH_2)_{15}-Me$

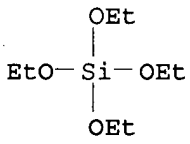
● Br^-

RN 75-59-2 HCAPLUS
CN Methanaminium, N,N,N-trimethyl-, hydroxide (9CI) (CA INDEX NAME)



● OH^-

RN 78-10-4 HCAPLUS
CN Silicic acid (H4SiO4), tetraethyl ester (8CI, 9CI) (CA INDEX NAME)



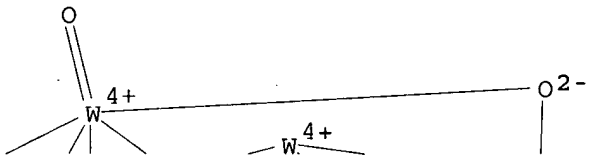
RN 1119-94-4 HCAPLUS
CN 1-Dodecanaminium, N,N,N-trimethyl-, bromide (9CI) (CA INDEX NAME)

$Me_3{}^+N-(CH_2)_{11}-Me$

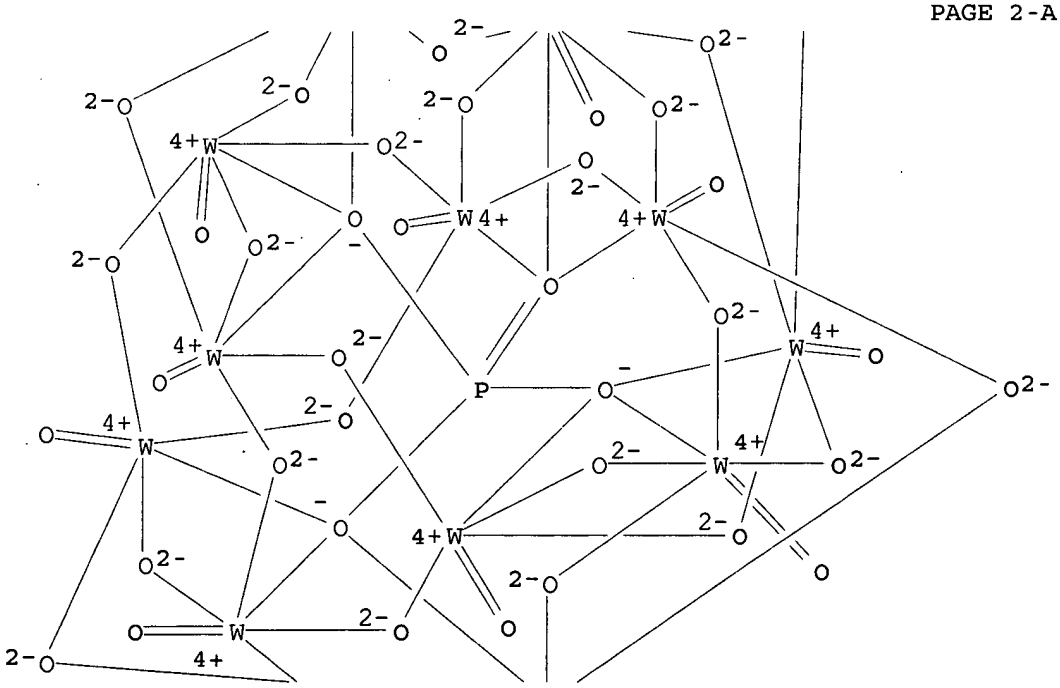
● Br^-

RN 1343-93-7 HCAPLUS
CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-
κO:κO:κO:κO':κO':κO':κO'':.kappa
.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen
(9CI) (CA INDEX NAME)

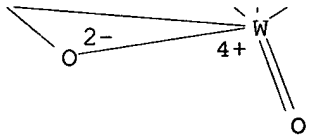
PAGE 1-A



PAGE 2-A

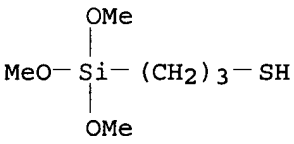


PAGE 3-A



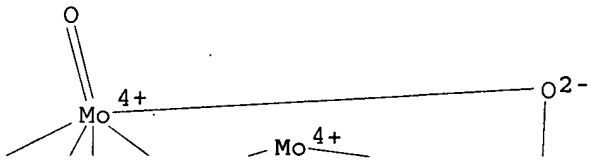
●3 H^+

RN 4420-74-0 HCAPLUS
CN 1-Propanethiol, 3-(trimethoxysilyl)- (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 12026-57-2 HCAPLUS
CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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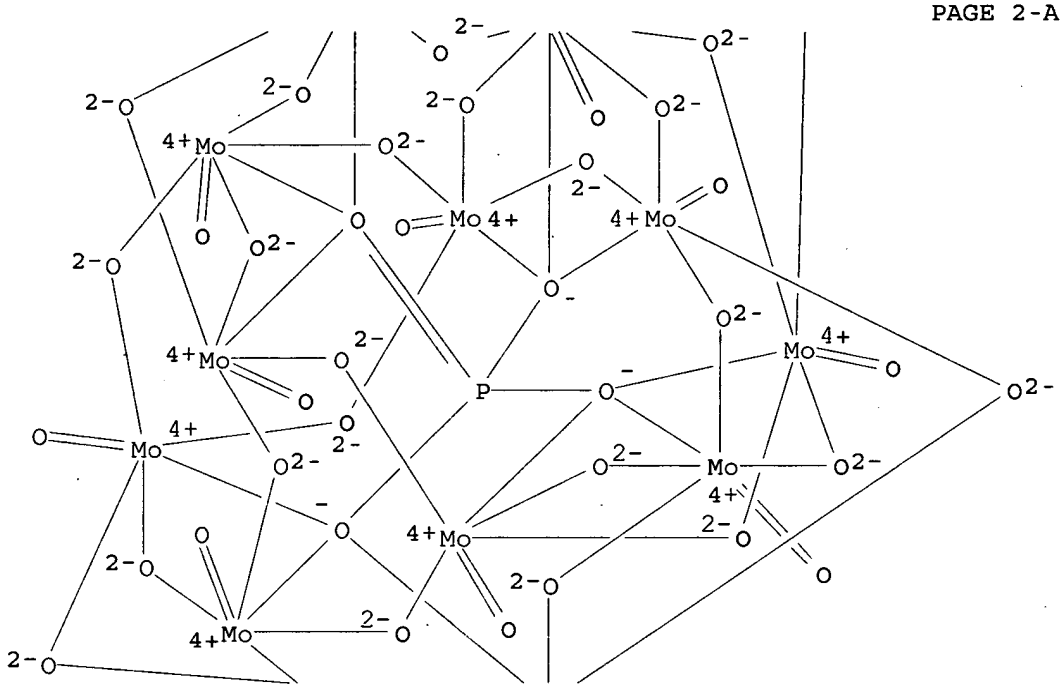

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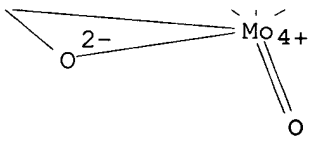
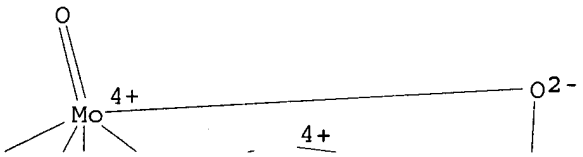


●3 H+

RN 12027-12-2 HCAPLUS
CN Molybdate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kappa.O':κO':κO':κO'':κO'':κO'':κO''':.kappa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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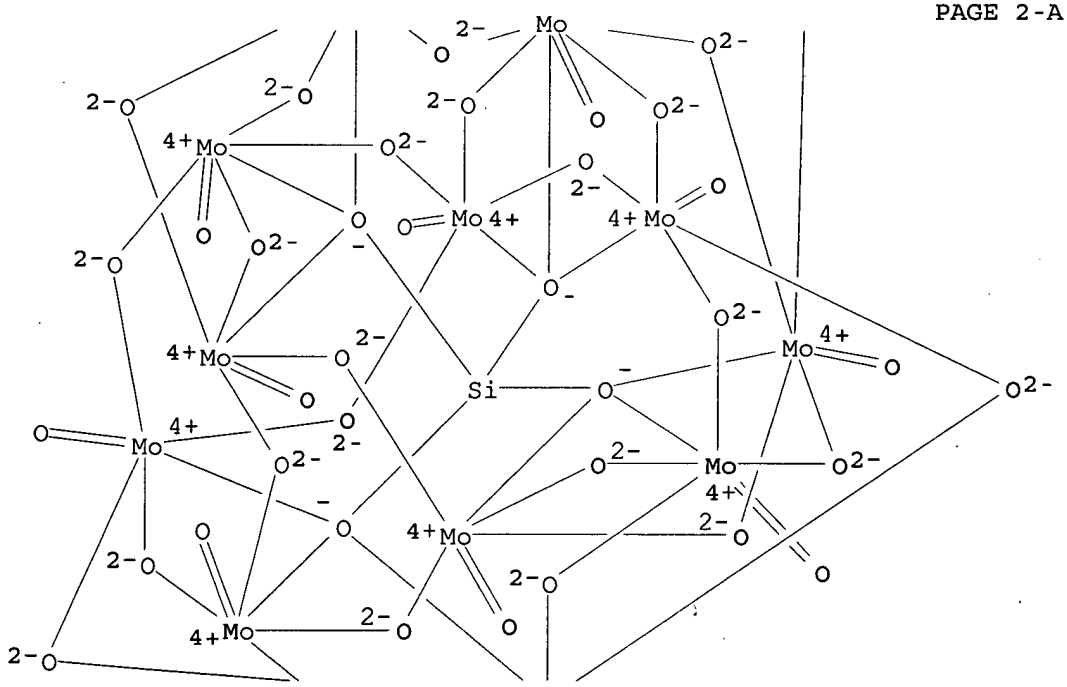
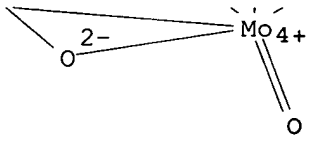


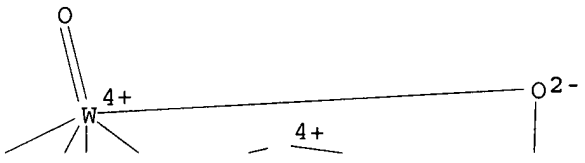
PAGE 3-A



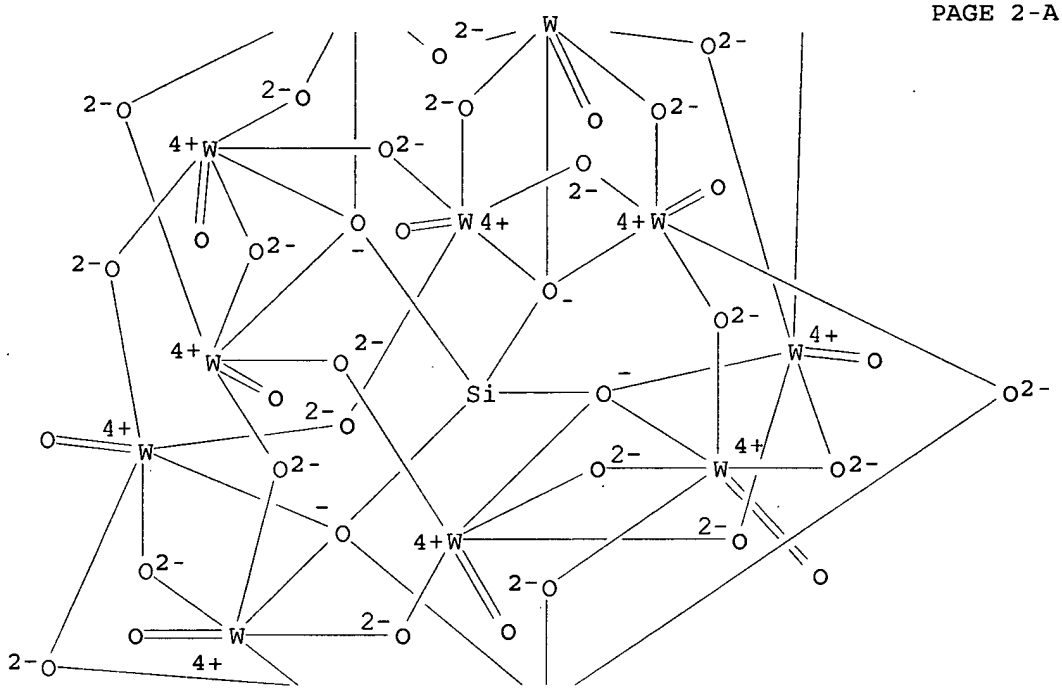
● 4 H^+

RN 12027-38-2 HCAPLUS
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kappa.O':κO':κO':κO'':κO'':κO'':κO''':.kappa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen (9CI) (CA INDEX NAME)

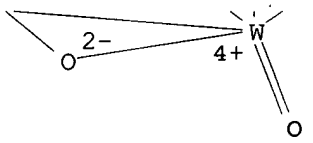
PAGE 1-A



PAGE 2-A

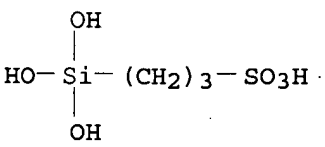


PAGE 3-A

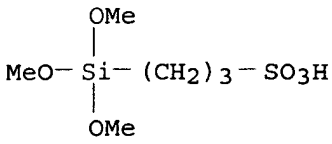


● 4 H^+

RN 70942-24-4 HCAPLUS
CN 1-Propanesulfonic acid, 3-(trihydroxysilyl)- (9CI) (CA INDEX NAME)

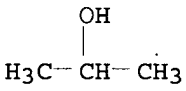


RN 79059-66-8 HCAPLUS
CN 1-Propanesulfonic acid, 3-(trimethoxysilyl)- (9CI) (CA INDEX NAME)



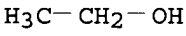
IT **555-31-7**, Tri(isopropyl)aluminate **555-75-9** **556-91-2** **865-31-6** **2269-22-9** **3085-30-1** **4073-85-2** **13242-21-2** **18267-08-8**, Tetraethyl zirconate **23519-77-9**, Tetrapropyl zirconate **28469-78-5**
RL: RCT (Reactant); RACT (Reactant or reagent)
(**zeolite** precursors; **functionalized zeolite** catalyst compns. for bisphenol manufacture)

RN 555-31-7 HCAPLUS
CN 2-Propanol, aluminum salt (9CI) (CA INDEX NAME)



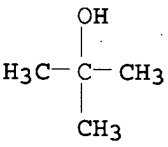
●1/3 Al

RN 555-75-9 HCAPLUS
CN Ethanol, aluminum salt (9CI) (CA INDEX NAME)



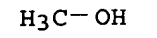
●1/3 Al

RN 556-91-2 HCAPLUS
CN 2-Propanol, 2-methyl-, aluminum salt (9CI) (CA INDEX NAME)



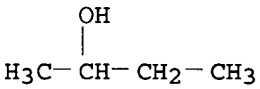
●1/3 Al

RN 865-31-6 HCAPLUS
CN Methanol, aluminum salt (8CI, 9CI) (CA INDEX NAME)



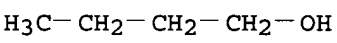
●1/3 Al

RN 2269-22-9 HCAPLUS
CN 2-Butanol, aluminum salt (9CI) (CA INDEX NAME)



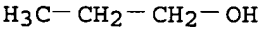
●1/3 Al

RN 3085-30-1 HCAPLUS
CN 1-Butanol, aluminum salt (9CI) (CA INDEX NAME)



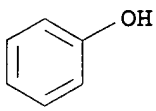
●1/3 Al

RN 4073-85-2 HCAPLUS
CN 1-Propanol, aluminum salt (9CI) (CA INDEX NAME)



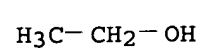
●1/3 Al

RN 13242-21-2 HCAPLUS
CN Phenol, zirconium(4+) salt (8CI, 9CI) (CA INDEX NAME)



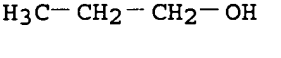
●1/4 Zr(IV)

RN 18267-08-8 HCAPLUS
CN Ethanol, zirconium(4+) salt (9CI) (CA INDEX NAME)



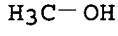
●1/4 Zr(IV)

RN 23519-77-9 HCAPLUS
CN 1-Propanol, zirconium(4+) salt (9CI) (CA INDEX NAME)



●1/4 Zr(IV).

RN 28469-78-5 HCAPLUS
CN Methanol, zirconium(4+) salt (9CI) (CA INDEX NAME)



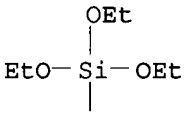
●1/4 Zr(IV)

L64 ANSWER 2 OF 24 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2005:127900 HCAPLUS
DN 142:413855
TI Preparation of mesoporous functional zeolites and their use
IN Zhu, Jianhua; Wang, Ying; Wei, Yilun; Xu, Yang; Wang, Yimeng; Wu, Zhengying
PA Nanjing University, Peop. Rep. China
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 9 pp.
CODEN: CNXXEV
DT Patent
LA Chinese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI CN 1460641	A	20031210	CN 2003-131688	20030606
PRAI CN 2003-131688		20030606		

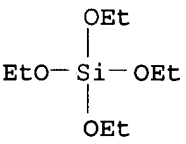
AB Mesoporous materials based on a silicate mol. sieve containing rare earth or transition metal atoms are prepared having a pore diameter of 4-10 nm, and a base strength of 9.3-22.5. The rare earth or transition metal can be Mg, Ca, Cu, Zn, Fe, Ni, Mo, or Mn. The material is prepared by (1) dissolving rare earth or transition metal oxysalts in water; (2) dissolving P123 in 2M HCl; (3) mixing the solns., adding Et silicate at 25 80°, heating at 80-120°, drying, and calcining at 500-600° to obtain the product. The molar ratio of Et silicate to P123 is 1:0.02. The product can be used as a cigarette additive.
IC ICM C01B039-00
ICS B01J020-18; B01J029-00
CC 49-4 (Industrial Inorganic Chemicals)
Section cross-reference(s): 11

ST mesoporous metal substituted zeolite prepn cigarette additive
IT Tobacco products
(cigarettes, additive; preparation of mesoporous functional zeolites and their use)
IT High-silica zeolites
RL: CPS (Chemical process); IMF (Industrial manufacture); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses)
(metal-substituted; preparation of mesoporous functional zeolites and their use)
IT 106392-12-5
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(P123, surfactant; preparation of mesoporous functional zeolites and their use)
IT **78-10-4**, TEOS 142-72-3, Magnesium acetate 557-34-6, Zinc acetate 3251-23-8, Cupric nitrate 10103-47-6, Chromium nitrate 10421-48-4, Ferric nitrate
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(preparation of mesoporous **functional zeolites** and their use)
IT **78-10-4**, TEOS
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(preparation of mesoporous **functional zeolites** and their use)
RN 78-10-4 HCAPLUS
CN Silicic acid (H4SiO4), tetraethyl ester (8CI, 9CI) (CA INDEX NAME)



L64 ANSWER 3 OF 24 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2004:672656 HCAPLUS
DN 142:474725
TI Synthesis and Characterization of Bifunctional Periodic Silica with Surface and Framework Benzene Functionality
AU Nie, Chun-Fa; Zhao, Rui; Suo, Ji-Shuan
CS Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, Lanzhou, 730000, Peop. Rep. China
SO Journal of Porous Materials (2004), 11(3), 141-146
CODEN: JPMAFX; ISSN: 1380-2224
PB Kluwer Academic Publishers
DT Journal
LA English
AB Novel organic-inorg. hybrid mesoporous mol. sieve of MCM-41 type containing both
bridge-bonded Ph groups in the walls and terminally bonded Ph groups protruding into the channel space was synthesized using TEOS, 1,4-bis(triethoxysilyl)benzene (BTESB) and (triethoxysilyl)benzene (TESB) as precursors, N-cetylpyridinium bromide (CPBr) as template under acidic conditions. This new material was characterized by FTIR, PXRD and N adsorption-desorption isotherms. The mesoporous organosilica was in-situ

sulfonylated and reacted with diamines.
CC 78-4 (Inorganic Chemicals and Reactions)
Section cross-reference(s): 66
ST zeolite MCM41 phenyl functionalized prepn sulfonylation diamine reaction; surface property zeolite MCM41 phenyl functionalized sulfonylated
IT Pore size distribution
Surface area
(of diamine-sulfonylated phenyl-functionalized zeolite MCM-41)
IT Zeolite MCM-41
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(preparation of diamine-sulfonylated phenyl-functionalized zeolite MCM-41 and surface properties of)
IT **78-10-4**, Tetraethyl silicate 780-69-8, Triethoxyphenylsilane 2615-18-1, 1,4-Bis(triethoxysilyl)benzene
RL: RCT (Reactant); RACT (Reactant or reagent)
(reactant for preparation of phenyl-**functionalized zeolite** MCM-41)
IT 7790-94-5, Chlorosulfonic acid
RL: RCT (Reactant); RACT (Reactant or reagent)
(reactant for preparation of sulfonylated phenyl-functionalized zeolite MCM-41)
IT 107-15-3, Ethylenediamine, reactions 20439-47-8 35132-20-8, 1R,2R-1,2-Diphenylethylenediamine
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with sulfonylated phenyl-functionalized zeolite MCM-41)
IT 140-72-7, N-Cetylpyridinium bromide
RL: NUU (Other use, unclassified); USES (Uses)
(template for preparation of phenyl-functionalized zeolite MCM-41)
IT **78-10-4**, Tetraethyl silicate
RL: RCT (Reactant); RACT (Reactant or reagent)
(reactant for preparation of phenyl-**functionalized zeolite** MCM-41)
RN 78-10-4 HCAPLUS
CN Silicic acid (H4SiO4), tetraethyl ester (8CI, 9CI) (CA INDEX NAME)



RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L64 ANSWER 4 OF 24 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2004:528389 HCAPLUS
DN 141:367601
TI Preparation of organo-functionalized mesoporous zeolites supported phosphine-rhodium complexes and their catalytic performance for hexene-1 hydroformylation
AU Yang, Yong; Peng, Qingrong; Yuan, Youzhu
CS Department of Chemistry, Xiamen University, Xiamen, 361005, Peop. Rep. China
SO Cuihua Xuebao (2004), 25(5), 421-425
CODEN: THHPD3; ISSN: 0253-9837
PB Kexue Chubanshe
DT Journal
LA Chinese

AB Organo-functionalized mesoporous zeolites MCM-41 and MCM-48, and amorphous SiO2 were used as supports to prepare heterogenized phosphine-rhodium complex via anchoring for the hydroformylation of 1-hexene. The supports and the catalysts were characterized by means of XRD, BET, FT-IR and AAS. The MCM-41 and MCM-48 were functionalized with silanes containing (mono-, di-, tri-) amino-, mercapto- and nitrile-groups, resp., without destruction of the mesoporous structure of the zeolites. The catalytic performance of the catalysts was related to the structure of organo-groups and also to the structural features of the supports. Higher catalytic activity and selectivity for n-C6H13CHO were obtained in the case of the catalysts using the mesoporous zeolites functionalized with amino- and nitrile-silanes as supports. No significant decrease in the catalytic performance of the phosphine-rhodium complex immobilized on the amino-functionalized mesoporous zeolites used repeatedly for 6 times was observed

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)

ST silane mesoporous zeolite phosphine rhodium catalyst hexene hydroformylation; heptanal prepn catalyst phosphine rhodium zeolite

IT MCM zeolites
RL: CAT (Catalyst use); USES (Uses)
(MCM-48; preparation of organosilane-functionalized mesoporous zeolite-supported phosphine-rhodium complexes and their catalytic performance for hexene hydroformylation)

IT Hydroformylation catalysts
(preparation of organosilane-functionalized mesoporous zeolite-supported phosphine-rhodium complexes and their catalytic performance for hexene hydroformylation)

IT Zeolite MCM-41
RL: CAT (Catalyst use); USES (Uses)
(preparation of organosilane-functionalized mesoporous zeolite-supported phosphine-rhodium complexes and their catalytic performance for hexene hydroformylation)

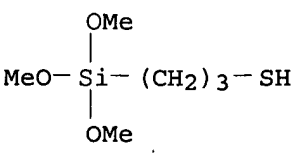
IT 1760-24-3, N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane
4420-74-0, 3-Mercaptopropyltrimethoxysilane 7631-86-9, Silica, uses 13822-56-5, 3-Aminopropyltrimethoxysilane 17185-29-4
55453-24-2, 3-Cyanopropyltrimethoxysilane
RL: CAT (Catalyst use); USES (Uses)
(preparation of organosilane-**functionalized** mesoporous **zeolite**-supported phosphine-rhodium complexes and their catalytic performance for hexene hydroformylation)

IT 111-71-7, Heptanal 592-41-6, 1-Hexene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of organosilane-functionalized mesoporous zeolite-supported phosphine-rhodium complexes and their catalytic performance for hexene hydroformylation)

IT **4420-74-0**, 3-Mercaptopropyltrimethoxysilane
RL: CAT (Catalyst use); USES (Uses)
(preparation of organosilane-**functionalized** mesoporous **zeolite**-supported phosphine-rhodium complexes and their catalytic performance for hexene hydroformylation)

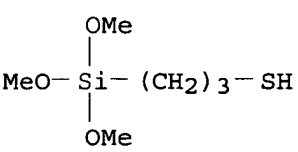
RN 4420-74-0 HCAPLUS

CN 1-Propanethiol, 3-(trimethoxysilyl)- (7CI, 8CI, 9CI) (CA INDEX NAME)



L64 ANSWER 5 OF 24 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2004:420973 HCAPLUS
DN 141:245191
TI Aminated MCM-41-tethered Wilkinson's complex: active immobilized catalyst precursor for cyclohexene hydroformylation
AU Huang, Lin; Wu, Jian Chun; Kawi, Sibudjing
CS Department of Chemical and Environmental Engineering, Chemical and Process Engineering Center, National University of Singapore, 119260, Singapore
SO Reaction Kinetics and Catalysis Letters (2004), 82(1), 65-71
CODEN: RKCLAU; ISSN: 0133-1736
PB Akademiai Kiado
DT Journal
LA English
OS CASREACT 141:245191
AB A catalyst systems of a Wilkinson complex, RhCl(PPh3)3, supported on MCM-41 zeolite via an aminoalkylsilane ligand is fairly effective and stable for cyclohexene hydroformylation at 100° and 28 bar of equimolar CO and H2. This catalyst has the advantages of both high activity and resistance to rhodium leaching.
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 24, 67
ST rhodium triphenylphosphine chloride complex anchoring MCM41 amine ligand; hydroformylation cyclohexene Wilkinson complex MCM41 catalyst
IT Catalyst supports
Hydroformylation catalysts
(activity and stability of catalyst system of RhCl(PPh3)3 amino-anchored to MCM-41 in cyclohexene hydroformylation)
IT Zeolite MCM-41
RL: CAT (Catalyst use); USES (Uses)
(amino- and thio-functionalized, support; activity and stability of catalyst system of RhCl(PPh3)3 amino-anchored to MCM-41 in cyclohexene hydroformylation)
IT 100-49-2P, Cyclohexane methanol 110-82-7P, Cyclohexane, preparation
RL: BYP (Byproduct); PREP (Preparation)
(activity and stability of catalyst system of RhCl(PPh3)3 amino-anchored to MCM-41 in cyclohexene hydroformylation)
IT 14694-95-2, Chlorotris(triphenylphosphine)rhodium
RL: CAT (Catalyst use); USES (Uses)
(activity and stability of catalyst system of RhCl(PPh3)3 amino-anchored to MCM-41 in cyclohexene hydroformylation)
IT 2043-61-0P, Cyclohexane carboxaldehyde
RL: IMF (Industrial manufacture); PREP (Preparation)
(activity and stability of catalyst system of RhCl(PPh3)3 amino-anchored to MCM-41 in cyclohexene hydroformylation)
IT 110-83-8, Cyclohexene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(activity and stability of catalyst system of RhCl(PPh3)3 amino-anchored to MCM-41 in cyclohexene hydroformylation)
IT 919-30-2, Aminopropyltriethoxysilane **4420-74-0**, 3-(Trimethoxysilyl)propanethiol
RL: CAT (Catalyst use); USES (Uses)
(**zeolite functionalization** ligand; activity and stability of catalyst system of RhCl(PPh3)3 amino-anchored to MCM-41 in cyclohexene hydroformylation)
IT **4420-74-0**, 3-(Trimethoxysilyl)propanethiol
RL: CAT (Catalyst use); USES (Uses)
(**zeolite functionalization** ligand; activity and stability of catalyst system of RhCl(PPh3)3 amino-anchored to MCM-41 in

cyclohexene hydroformylation)
RN 4420-74-0 HCAPLUS
CN 1-Propanethiol, 3-(trimethoxysilyl)- (7CI, 8CI, 9CI) (CA INDEX NAME)



RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

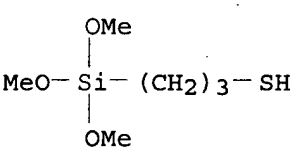
L64 ANSWER 6 OF 24 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2004:271022 HCAPLUS
DN 141:56013
TI Selective synthesis of Bisphenol-A over mesoporous MCM silica catalysts functionalized with sulfonic acid groups
AU Das, Debasish; Lee, Jyh-Fu; Cheng, Soofin
CS Department of Chemistry, National Taiwan University, Taipei, 106, Taiwan
SO Journal of Catalysis (2004), 223(1), 152-160
CODEN: JCTLA5; ISSN: 0021-9517
PB Elsevier Science
DT Journal
LA English
OS CASREACT 141:56013
AB Mesoporous MCM-41 and MCM-48 silicas anchored with sulfonic acid (SO3H) groups via postsynthesis modification are very effective for the synthesis of bisphenol A by liquid-phase condensation of phenol with acetone. Higher amts. of thiol groups can be incorporated in MCM-48 silicas presumably due to the presence of larger number of surface silanol groups. However sulfur K-edge XANES spectroscopy reveals that effective oxidation of the precursor thiol (SH) groups to the sulfonic acid (SO3H) groups was necessary for obtaining samples of good catalytic activity. It was noted that when sulfur loadings exceed 1.5 meq/g solid a part of the sulfur atoms remains in the reduced form even after prolonged oxidation MCM-41 silica anchored with sulfonic acid groups has comparable catalytic activity to that of com. ion-exchange resin Amberlite-120 and the former also showed higher selectivity toward the desired p,p' isomer. MCM-48 silica-anchored samples are equally effective for selective synthesis of bisphenol A.
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
ST sulfonic acid functionalized MCM zeolite synthesis bisphenol A
IT MCM zeolites
RL: CAT (Catalyst use); USES (Uses)
(MCM-48, sulfonic acid-functionalized; in selective synthesis of bisphenol A over mesoporous MCM silica catalysts functionalized with sulfonic acid groups)
IT Zeolite MCM-41
RL: CAT (Catalyst use); USES (Uses)
(sulfonic acid-functionalized; in selective synthesis of bisphenol A over mesoporous MCM silica catalysts functionalized with sulfonic acid groups)
IT **4420-74-0D**, 3-Mercaptopropyltrimethoxysilane, reaction products with MCM **zeolites**, oxidized
RL: CAT (Catalyst use); USES (Uses)
(catalyst; selective synthesis of bisphenol A over mesoporous MCM silica catalysts **functionalized** with sulfonic acid groups)
IT 67-64-1, Acetone, reactions 108-95-2, Phenol, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
(in selective synthesis of bisphenol A over mesoporous MCM silica catalysts functionalized with sulfonic acid groups)

IT 80-05-7P, Bisphenol A, preparation
RL: SPN (Synthetic preparation); PREP (Preparation)
(selective synthesis of bisphenol A over mesoporous MCM silica catalysts functionalized with sulfonic acid groups)

IT **4420-74-0D**, 3-Mercaptopropyltrimethoxysilane, reaction products with MCM **zeolites**, oxidized
RL: CAT (Catalyst use); USES (Uses)
(catalyst; selective synthesis of bisphenol A over mesoporous MCM silica catalysts **functionalized** with sulfonic acid groups)

RN 4420-74-0 HCAPLUS
CN 1-Propanethiol, 3-(trimethoxysilyl)- (7CI, 8CI, 9CI) (CA INDEX NAME)



RE.CNT 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L64 ANSWER 7 OF 24 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2004:234123 HCAPLUS
DN 140:393324
TI Nafion/acid functionalized zeolite nanocomposite fuel cell membranes
AU Holmberg, Brett A.; Wang, Huanting; Norbeck, Joseph M.; Yan, Yushan
CS College of Engineering - Center for Environmental Research and Technology (CE-CERT) and Department of Chemical and Environmental Engineering, University of California, Riverside, CA, 92521, USA
SO Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2004), 45(1), 24-25
CODEN: ACPPAY; ISSN: 0032-3934
PB American Chemical Society, Division of Polymer Chemistry
DT Journal; (computer optical disk)
LA English
AB Organic/inorg. composite membranes capable for fuel cell operation at temps. in the 140 X range can be made with a polymer such as Nafion (for proton conductivity and gas impermeability) and an inorg. additive such as silica to maintain hydration and reduce swelling. This study uses an acid-functionalized microporous Zeolite with high surface area and inner pore surface area to make more efficient use of the sulfonation precursors. A phenylethyl functionalized beta zeolite was synthesized by substituting some phenylethyl trimethoxysilane in the silica precursors, and the organic template removed and the phenylethyl groups were simultaneously sulfonated with sulfuric acid. Composite membranes with Nafion were cast, boiled in hydrogen peroxide, and doped with sulfuric acid. XRD, SEM, impedance spectroscopy and methanol permeability of the membranes were measured. Loadings of 20 weight% zeolite were to much and the film exhibited a cracked crust of zeolite. Overall, the 5 weight% Nafion/ acid functionalized zeolite beta nanocomposite membrane possessed a proton conductivity/ methanol permeability (selectivity) ratio 70 % high than com. Nafion 117 at 21 °C, and 110 % higher than com. Nafion 117 at 77 °C. The 10 wt% sulfonated zeolite BEA nanocomposite membrane performed poorly relative to the 5 wt% sulfonated zeolite BEA, Nafion 117,

and recast Nafion membranes, and its lack of improvement is likely caused by the inhomogeneous dispersion of the nanocrystals within the membrane.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 36, 57

ST Nafion acid functionalized beta zeolite nanocomposite fuel cell membrane

IT Fuel cell separators
Nanocomposites
Sulfonation
(Nafion/acid functionalized beta zeolite nanocomposite fuel cell membranes)

IT Polyoxyalkylenes, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(fluorine- and sulfo-containing, ionomers, nanocomposite with zeolites; Nafion/acid functionalized beta zeolite nanocomposite fuel cell membranes)

IT Beta zeolites
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(nanocomposites with Nafion; Nafion/acid functionalized beta zeolite nanocomposite fuel cell membranes)

IT Fluoropolymers, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(polyoxyalkylene-, sulfo-containing, ionomers, nanocomposite with zeolites; Nafion/acid functionalized beta zeolite nanocomposite fuel cell membranes)

IT Ionomers
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(polyoxyalkylenes, fluorine- and sulfo-containing, nanocomposite with zeolites; Nafion/acid functionalized beta zeolite nanocomposite fuel cell membranes)

IT Ionic conductivity
(proton; Nafion/acid functionalized beta zeolite nanocomposite fuel cell membranes)

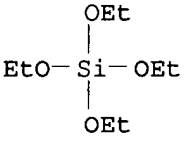
IT Permeability
(to methanol; Nafion/acid functionalized beta zeolite nanocomposite fuel cell membranes)

IT 67-56-1, Methanol, processes
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(Nafion/acid functionalized beta zeolite nanocomposite fuel cell membranes)

IT 66796-30-3, Nafion 117
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(Nafion/acid functionalized beta zeolite nanocomposite fuel cell membranes)

IT **78-10-4**, Tetraethoxysilane 7429-90-5, Aluminum, reactions 7664-93-9, Sulfuric acid, reactions 49539-88-0
RL: RCT (Reactant); RACT (Reactant or reagent)
(Nafion/acid **functionalized** beta **zeolite** nanocomposite fuel cell membranes)

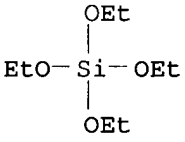
IT 7631-86-9, Fumed silica, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(colloidal; Nafion/acid functionalized beta zeolite nanocomposite fuel cell membranes)
IT 1344-28-1P, Alumina, uses
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(phase in zeolite; Nafion/acid functionalized beta zeolite nanocomposite fuel cell membranes)
IT **78-10-4**, Tetraethoxysilane
RL: RCT (Reactant); RACT (Reactant or reagent)
(Nafion/acid **functionalized** beta **zeolite** nanocomposite fuel cell membranes)
RN 78-10-4 HCAPLUS
CN Silicic acid (H4SiO4), tetraethyl ester (8CI, 9CI) (CA INDEX NAME)



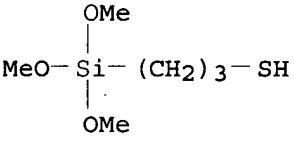
RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L64 ANSWER 8 OF 24 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2004:30989 HCAPLUS
DN 141:227187
TI Synthesis of n-amyl acetate over d-SBA-15 mesoporous zeolite functionalized with sulfonic acid group
AU Sun, Mingzhu; Qi, Yutai; Zhang, Li; Yuan, Xingdong; Shen, Jian
CS Department of Petrochemical Engineering, Liaoning University of Petroleum & Chemical technology, Fushun, 113001, Peop. Rep. China
SO Jingxi Shiyou Huagong (2003), (1), 4-7
CODEN: JSHIBF; ISSN: 1003-9384
PB Jingxi Shiyou Huagong Bianjibu
DT Journal
LA Chinese
OS CASREACT 141:227187
AB D-SBA-15-SO3H as a mesoporous material with sulfonic acid group was prepared by a direct synthesis method. Several kinds of solid and liquid acidic catalysts for esterification of acetic acid with n-amyl alc. were investigated, of which the d-SBA-15-SO3H is the best solid catalyst for synthesis of n-amyl acetate. The factors affecting the catalytic activity of d-SBA-15-SO3H were studied, and the optimum reaction conditions were found as follows: amyl alc./acetic acid = 1.1:1 (mol), reaction temperature 120°, reaction time 4 h, ratio of catalyst to acetic acid 2 g/mol. After repeated use, d-SBA-15-SO3H is stable. The catalyst d-SBA-15-SO3H is useful as a replacement for H2SO4.
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
ST amyl acetate mesoporous zeolite sulfonic acid catalyst; acetic acid amyl alc esterification catalyst
IT Zeolites (synthetic), preparation
RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(sulfonated; synthesis of n-amyl acetate over d-SBA-15 mesoporous zeolite functionalized with sulfonic acid group)

IT Esterification catalysts
(synthesis of n-amyl acetate over d-SBA-15 mesoporous zeolite functionalized with sulfonic acid group)
IT 628-63-7P, n-Amyl acetate
RL: IMF (Industrial manufacture); PREP (Preparation)
(synthesis of n-amyl acetate over d-SBA-15 mesoporous zeolite functionalized with sulfonic acid group)
IT 64-19-7, Acetic acid, reactions 71-41-0, Amyl alcohol, reactions **78-10-4**, TEOS **4420-74-0**, γ-Mercaptopropyltrimethoxysilane
RL: RCT (Reactant); RACT (Reactant or reagent)
(synthesis of n-amyl acetate over d-SBA-15 mesoporous **zeolite functionalized** with sulfonic acid group)
IT **78-10-4**, TEOS **4420-74-0**, γ-Mercaptopropyltrimethoxysilane
RL: RCT (Reactant); RACT (Reactant or reagent)
(synthesis of n-amyl acetate over d-SBA-15 mesoporous **zeolite functionalized** with sulfonic acid group)
RN 78-10-4 HCAPLUS
CN Silicic acid (H4SiO4), tetraethyl ester (8CI, 9CI) (CA INDEX NAME)



RN 4420-74-0 HCAPLUS
CN 1-Propanethiol, 3-(trimethoxysilyl)- (7CI, 8CI, 9CI) (CA INDEX NAME)



L64 ANSWER 9 OF 24 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2004:15352 HCAPLUS
DN 140:166165
TI Preparation of hollow zeolite spheres and three-dimensionally ordered macroporous zeolite monoliths with functionalized interiors
AU Dong, Angang; Ren, Nan; Yang, Wuli; Wang, Yajun; Zhang, Yahong; Wang, Deju; Hu, Jianhua; Gao, Zi; Tang, Yi
CS Shanghai Key Laboratory of Molecular Catalysis and Innovative Materials, Department of Chemistry, Fudan University, Shanghai, 200433, Peop. Rep. China
SO Advanced Functional Materials (2003), 13(12), 943-948
CODEN: AFMDC6; ISSN: 1616-301X
PB Wiley-VCH Verlag GmbH & Co. KGaA
DT Journal
LA English
AB A flexible strategy involving hydrothermal transformation of guest-incorporated zeolite-seeded mesoporous silica spheres was proposed to prepare guest-encapsulated hollow zeolite spheres and three dimensionally (3D) ordered macroporous zeolite monoliths. The guest species that were

pre-incorporated into the mesopores of silica spheres can be spontaneously encapsulated inside the formed hollow zeolite shells by consuming silica nutrition of the original mesoporous silica cores during the hydrothermal process. A wide range of guest materials with a size ranging from nanometers to micrometers, e.g., Ag and PdO nanoparticles, and mesoporous spheres of carbon and polydivinylbenzene polymer of micrometer size were successfully encapsulated into both discrete hollow zeolite spheres and 3D ordered macroporous zeolite monoliths. Such materials are expected to find a variety of applications such as catalysis, adsorption, and microreactors for their special structures with active species inside and zeolitic porous shell outside.

CC 49-4 (Industrial Inorganic Chemicals)

ST hollow zeolite sphere mesoporous functionalized zeolite monolith prepn

IT Spheres
(hollow; preparation of hollow zeolite spheres and three dimensionally ordered macroporous zeolite monoliths with functionalized interiors)

IT Nanoparticles
(in preparation of hollow zeolite spheres and three dimensionally ordered macroporous zeolite monoliths with functionalized interiors)

IT Porous materials
(mesoporous; preparation of hollow zeolite spheres and three dimensionally ordered macroporous zeolite monoliths with functionalized interiors)

IT Encapsulation
(microencapsulation; preparation of hollow zeolite spheres and three dimensionally ordered macroporous zeolite monoliths with functionalized interiors)

IT Zeolites (synthetic), preparation
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
(preparation of hollow zeolite spheres and three dimensionally ordered macroporous zeolite monoliths with functionalized interiors)

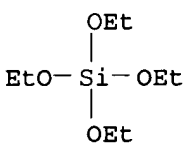
IT **78-10-4**, Tetraethoxysilane 4499-86-9, Tetrapropylammonium hydroxide 7631-86-9, Silica, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(in preparation of hollow **zeolite** spheres and three dimensionally ordered macroporous **zeolite** monoliths with **functionalized** interiors)

IT 1314-08-5P, Palladium monoxide 7440-22-4P, Silver, preparation 7440-44-0P, Carbon, preparation 9003-69-4P, Polydivinylbenzene
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
(preparation of hollow zeolite spheres and three dimensionally ordered macroporous zeolite monoliths with functionalized interiors containing particles of)

IT **78-10-4**, Tetraethoxysilane
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(in preparation of hollow **zeolite** spheres and three dimensionally ordered macroporous **zeolite** monoliths with **functionalized** interiors)

RN 78-10-4 HCAPLUS

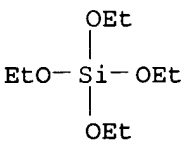
CN Silicic acid (H4SiO4), tetraethyl ester (8CI, 9CI) (CA INDEX NAME)



RE.CNT 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L64 ANSWER 10 OF 24 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2003:79168 HCAPLUS
DN 139:300758
TI Structural analysis of oxyanion-cation complexes anchored by organic group in mesoporous silicas
AU Yoshitake, Hideaki; Yokoi, Toshiyuki; Tatsumi, Takashi
CS Graduate School of Environment and Information Sciences, Yokohama National University, Yokohama, 240-8501, Japan
SO Studies in Surface Science and Catalysis (2002), 144(Characterization of Porous Solids VI), 677-684
CODEN: SSCTDM; ISSN: 0167-2991
PB Elsevier Science B.V.
DT Journal
LA English
AB The structure of oxyanion-Fe3+-amino group complexes in the pore of MCM-41 have been studied to develop heterogeneous chemical of oxyanion-cation interactions on the oxide surface with organic groups. XAFS spectroscopies were applied to the structural analyses. Two kinds of structure were shown in arsenate- and molybdate-Fe complexes. One is edge-sharing and the other is corner-sharing coordinations. In contrast, a uniform coordination structure was implied in chromate and selenate adsorptions. The stoichiometry at the adsorption saturation and the coordination nos. suggest that a part of chromate, selenate and molybdate are reduced into monovalent anions.
CC 78-9 (Inorganic Chemicals and Reactions)
ST zeolite iron amine functionalized adsorption oxyanion; arsenate adsorption aminoiron functionalized MCM zeolite; molybdate adsorption aminoiron functionalized MCM zeolite; chromate adsorption aminoiron functionalized MCM zeolite; selenate adsorption aminoiron functionalized MCM zeolite; redn oxyanion adsorption aminoiron functionalized zeolite
IT Oxyanions
(adsorption of oxyanions by iron-amine-functionalized MCM-41 zeolite)
IT Zeolite MCM-41
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(iron-amine-functionalized; adsorption of oxyanions by functionalized zeolite and resulting coordination structure)
IT 7784-41-0, Potassium arsenate (KH2AsO4) 7789-00-6 7790-59-2, Potassium selenate (K2SeO4) 13446-49-6, Potassium molybdate (K2MoO4)
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(adsorption of oxyanions by iron-amine-functionalized MCM-41 zeolite)
IT 112-00-5, Dodecyltrimethylammonium chloride
RL: NUU (Other use, unclassified); USES (Uses)
(for preparation of iron-amine-functionalized MCM-41 zeolite)
IT **78-10-4**, TEOS 1760-24-3 7705-08-0, Ferric chloride, reactions 15875-97-5, Trimethylammonium hydroxide
RL: RCT (Reactant); RACT (Reactant or reagent)
(for preparation of iron-amine-**functionalized** MCM-41 **zeolite**)

IT **78-10-4**, TEOS
RL: RCT (Reactant); RACT (Reactant or reagent)
(for preparation of iron-amine-**functionalized** MCM-41 **zeolite**)
RN 78-10-4 HCAPLUS
CN Silicic acid (H4SiO4), tetraethyl ester (8CI, 9CI) (CA INDEX NAME)



RE.CNT 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

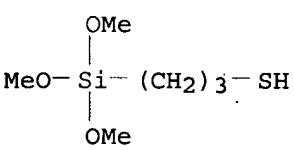
L64 ANSWER 11 OF 24 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2002:866582 HCAPLUS
DN 138:126662
TI Preparation of thiol-functionalized mesoporous molecular sieve and removal of Pb2+, Hg2+ and Cd2+ in water
AU Xu, Ying-Ming; Li, Jun-Xin; Dai, Xiao-Hua; Zhang, Ze; Gao, Huai-You
CS Key Laboratory of Agro-Product Pollution Control of MOA, Agro-Environmental Protection Institute of MOA, Tianjin, 300191, Peop. Rep. China
SO Yingyong Huaxue (2002), 19(10), 941-945
CODEN: YIHUED; ISSN: 1000-0518
PB Yingyong Huaxue Bianji Weiyuanhui
DT Journal
LA Chinese
AB Organic ligands containing the thiol(--SH) metal-chelating functional group were grafted to the surface of a mesoporous mol. sieve MCM-41 prepared from tetraethylorthosilicate, tetramethylanmonium hydroxide and hexadecyl tri-Me ammonium bromide. X-ray diffraction, IR spectroscopy, elemental anal., thermogravimetric anal., 29Si and 13C solid-state NMR spectroscopy results demonstrated the presence of the organic ligands in the modified thiol-functionalized material (designated as MP-MCM-41). MP-MCM-41 was found to be highly effective for the adsorption of Hg(II), Pb(II), and Cd(II) ions, exhibiting high metal ion uptake capacities of 148.20, 135.76, and 36.50 mg/g-1, resp. The adsorption was fitted to Langmuir isotherms.
CC 61-5 (Water)
Section cross-reference(s): 57
ST thiol functionalized mesoporous zeolite lead mercury cadmium adsorption water
IT Water purification
(adsorption; preparation of thiol-functionalized mesoporous zeolite for removal of Pb, Hg, and Cd from water)
IT Sulfhydryl group
(preparation of thiol-functionalized mesoporous zeolite for removal of Pb, Hg, and Cd from water)
IT Zeolite MCM-41
RL: NUU (Other use, unclassified); RGT (Reagent); RACT (Reactant or reagent); USES (Uses)
(preparation of thiol-functionalized mesoporous zeolite for removal of Pb, Hg, and Cd from water)
IT 7439-92-1, Lead, processes 7439-97-6, Mercury, processes 7440-43-9,

Cadmium, processes
RL: REM (Removal or disposal); PROC (Process)
(preparation of thiol-functionalized mesoporous zeolite for removal of Pb, Hg, and Cd from water)

IT **4420-74-0**, 3-Mercapto Propyl trimethoxy silane
RL: RGT (Reagent); RACT (Reactant or reagent)
(preparation of thiol-**functionalized** mesoporous **zeolite** for removal of Pb, Hg, and Cd from water)

IT **4420-74-0**, 3-Mercapto Propyl trimethoxy silane
RL: RGT (Reagent); RACT (Reactant or reagent)
(preparation of thiol-**functionalized** mesoporous **zeolite** for removal of Pb, Hg, and Cd from water)

RN 4420-74-0 HCAPLUS
CN 1-Propanethiol, 3-(trimethoxysilyl)- (7CI, 8CI, 9CI) (CA INDEX NAME)



L64 ANSWER 12 OF 24 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2002:37191 HCAPLUS
DN 136:174877
TI Preparation and characterization of nanostructured material MCM-41 and the luminescent functional supramolecule with Eu(Phen)4 as guest
AU Yin, Wei; Zhang, Mai-sheng; Kang, Bei-sheng
CS School of Chemistry and Chemical Engineering, Zhongshan University, Canton, 510275, Peop. Rep. China
SO Faguang Xuebao (2001), 22(3), 232-236
CODEN: FAXUEW; ISSN: 1000-7032
PB Kexue Chubanshe
DT Journal
LA Chinese
AB Nanosized mesoporous mol. sieve MCM-41 was synthesized with tetra-Et orthosilicate (TEOS) as the source of SiO2 and cetyltrimethylammonium bromide (CTABR) as the template under supersonic wave conditions. By means of high-resolution TEM (HRTEM), the nanosized MCM-41 was observed which contains ϕ10-40 nm spherical balls possessed ϕ2.7 nm regular uniform channels. The nanostructured material (NSM) MCM-41 has good dispersibility and its particle diameter is well distributed. The luminescent functional supramol. MCM-41-Eu(Phen)4 between the nanosized MCM-41 and Eu(Phen)4 was prepared in EtOH, and characterized by TEM, XRD, TG, IR and fluorescence. The NSM of MCM-41-Eu(Phen)4 are ϕ10-40 nm spherical balls too. The XRD patterns are similar to the normal crystal of MCM-41. The IR spectra showed that the guest Eu(Phen)4 is non-IR-active and the -OH absorptions of the host MCM-41 are specially fine, strong and sharp in the supramol. system MCM-41-Eu(Phen)4. The luminescence indicated that an energy barrier (0.395 eV) exists in MCM-41-Eu(Phen)4 preventing IR radiation (<3030 cm-1) from reaching the guest Eu(Phen)4 due to shielding effect of the host on the guest. The mols. of Eu(Phen)4 presenting in the channel of MCM-41 had formed the centers of luminescence, hence the functional supramol. NSM with strong luminescence under UV excitation was obtained. The transitions 5D0→7FJ (J = 1, 2, 3, 4, 5) of Eu3+ with peak values 590.4, 614.6 (617.9), 653.4, 685.4, and 699.6 nm were observed in which the elec. dipole transition, especially, 5D0→7F2 (617.9 nm red), is as strong as that for

the fine powder of Eu(Phen)4. This work resulted in a new field of luminescence and a new route to prepare complex luminescent NSM.

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST luminescence zeolite MCM41 functional supramol europium phenanthroline guest

IT Fluorescence
IR spectra
Luminescence
Thermal decomposition
Transmission electron microscopy
X-ray diffraction
(of zeolite MCM-41 functional supramol. with europium phenanthroline complex as guest)

IT Zeolite MCM-41
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation and characterization of nanostructured material and luminescent functional supramol. with europium phenanthroline complex as guest)

IT **78-10-4**, Tetraethylsilicate
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation and characterization of **zeolite** MCM-41 and luminescent **functional** supramol. with europium phenanthroline complex as guest from)

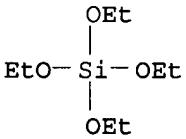
IT **57-09-0**, Cetyltrimethylammonium bromide
RL: NUU (Other use, unclassified); USES (Uses)
(preparation and characterization of **zeolite** MCM-41 and luminescent **functional** supramol. with europium phenanthroline complex as guest using template of)

IT 397843-02-6P
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(preparation and characterization of zeolite MCM-41 and luminescent functional supramol. with guest of)

IT **78-10-4**, Tetraethylsilicate
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation and characterization of **zeolite** MCM-41 and luminescent **functional** supramol. with europium phenanthroline complex as guest from)

RN 78-10-4 HCAPLUS

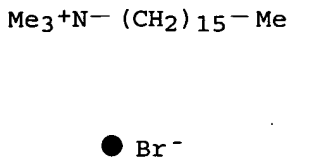
CN Silicic acid (H4SiO4), tetraethyl ester (8CI, 9CI) (CA INDEX NAME)



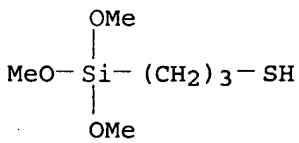
IT **57-09-0**, Cetyltrimethylammonium bromide
RL: NUU (Other use, unclassified); USES (Uses)
(preparation and characterization of **zeolite** MCM-41 and luminescent **functional** supramol. with europium phenanthroline complex as guest using template of)

RN 57-09-0 HCAPLUS

CN 1-Hexadecanaminium, N,N,N-trimethyl-, bromide (9CI) (CA INDEX NAME)



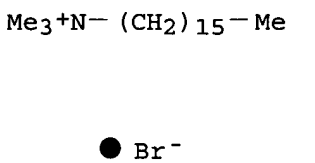
L64 ANSWER 13 OF 24 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2001:774302 HCAPLUS
DN 136:136585
TI Sulfonic acid functionalized mesoporous MCM-41 silica as a convenient catalyst for Bisphenol-A synthesis
AU Das, Debasish; Lee, Jyh-Fu; Cheng, Soofin
CS Department of Chemistry, National Taiwan University, Taipei, 106, Taiwan
SO Chemical Communications (Cambridge, United Kingdom) (2001), (21), 2178-2179
CODEN: CHCOFS; ISSN: 1359-7345
PB Royal Society of Chemistry
DT Journal
LA English
AB Sulfonic acid groups anchored to the surface of mesoporous MCM-41 silica were identified with S K-edge XANES spectra and the material is an efficient catalyst for the liquid phase condensation of phenol with acetone to form bisphenol-A with high selectivity.
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 67
ST sulfonic acid functionalized zeolite bisphenol catalyst
IT Condensation reaction catalysts
(sulfonic acid functionalized mesoporous MCM-41 silica as convenient catalyst for Bisphenol A synthesis)
IT Zeolite MCM-41
RL: CAT (Catalyst use); CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(sulfonic acid functionalized mesoporous MCM-41 silica as convenient catalyst for Bisphenol A synthesis)
IT **4420-74-0D**, 3-Mercaptopropyltrimethoxysilane, reaction products with **zeolites**
RL: CAT (Catalyst use); USES (Uses)
(sulfonic acid **functionalized** mesoporous MCM-41 silica as convenient catalyst for Bisphenol A synthesis)
IT 80-05-7P, Bisphenol A, preparation
RL: IMF (Industrial manufacture); PREP (Preparation)
(sulfonic acid functionalized mesoporous MCM-41 silica as convenient catalyst for Bisphenol A synthesis)
IT 67-64-1, Acetone, reactions 108-95-2, Phenol, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(sulfonic acid functionalized mesoporous MCM-41 silica as convenient catalyst for Bisphenol A synthesis)
IT **4420-74-0D**, 3-Mercaptopropyltrimethoxysilane, reaction products with **zeolites**
RL: CAT (Catalyst use); USES (Uses)
(sulfonic acid **functionalized** mesoporous MCM-41 silica as convenient catalyst for Bisphenol A synthesis)
RN 4420-74-0 HCAPLUS
CN 1-Propanethiol, 3-(trimethoxysilyl)- (7CI, 8CI, 9CI) (CA INDEX



RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L64 ANSWER 14 OF 24 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2001:773294 HCAPLUS
DN 136:256173
TI Comparison of 3-aminopropylsilane linked to MCM-41- and HMS-type silicas synthesized under biphasic and monophasic conditions
AU Macquarrie, D. J.; Rocchia, M.; Onida, B.; Garrone, E.; Lentz, P.; Nagy, J. B.; Brunel, D.; Blanc, A. C.; Fajula, F.
CS Department of Chemistry, University of York, Heslington-York, YO10 5DD, UK
SO Studies in Surface Science and Catalysis (2001), 135(Zeolites and Mesoporous Materials at the Dawn of the 21st Century), 4849-4856
CODEN: SSCTDM; ISSN: 0167-2991
PB Elsevier Science B.V.
DT Journal; (computer optical disk)
LA English
AB Functionalized mesoporous silicas prepared by either grafting (by silylation of MCM-41) or by self-assembly co-condensation of organically functionalized SiO2 precursors and SiO2 precursor (RO)4Si in presence of nonionic surfactants feature different properties. Materials were characterized by N2 sorption isotherms, FTIR and MAS NMR. Imine formation during contacting the different samples with probes such as acetone and benzaldehyde demonstrated different environments of the anchored amine groups.
CC 78-4 (Inorganic Chemicals and Reactions)
ST zeolite MCM 41 aminopropylsilane functionalized prepn; silicate HMS aminopropylsilane functionalized prepn; aldehyde reaction aminopropylsilane functionalized silicate MCM HMS; imine formation aminopropylsilane functionalized silicate structure; grafting cocondensation functionalized zeolite prepn reactivity comparison
IT Zeolite MCM-41
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(aminopropylsilane-functionalized; preparation and reaction with aldehydes to form imine)
IT Silicates, preparation
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(aminopropylsilane-functionalized; preparation and reaction with aldehydes to form imine in mesoporous)
IT IR spectra
NMR (nuclear magnetic resonance)
(of aminopropylsilane-functionalized zeolite MCM-41 and mesoporous silicate HMS)
IT Pore
Surface area
(volume and structure of aminopropylsilane-functionalized zeolite MCM-41 and mesoporous silicate HMS)
IT 7631-86-9, Aerosil 200V, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(colloidal; for preparation of zeolite MCM-41 with aminopropylsilane-functionalization)

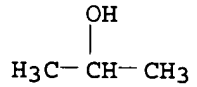
IT 6382-82-7, 3-Aminopropylsilane
RL: RCT (Reactant); RACT (Reactant or reagent)
(for preparation of functionalized zeolite MCM-41 and mesoporous silicate HMS)
IT 78-10-4, TEOS
RL: RCT (Reactant); RACT (Reactant or reagent)
(for preparation of silicate HMS with aminopropylsilane-functionalization)
IT **57-09-0**, Cetyltrimethylammonium bromide
RL: NUU (Other use, unclassified); USES (Uses)
(for preparation of **zeolite** MCM-41 with aminopropylsilane-**functionalization**)
IT **57-09-0**, Cetyltrimethylammonium bromide
RL: NUU (Other use, unclassified); USES (Uses)
(for preparation of **zeolite** MCM-41 with aminopropylsilane-**functionalization**)
RN 57-09-0 HCAPLUS
CN 1-Hexadecanaminium, N,N,N-trimethyl-, bromide (9CI) (CA INDEX NAME)



RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L64 ANSWER 15 OF 24 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2001:772615 HCAPLUS
DN 136:233832
TI Asymmetric trimethylsilylcyanation of benzaldehyde catalyzed by chiral Ti(IV) salen complexes immobilized on MCM-41
AU Kim, Joo-Ho; Kim, Geon-Joong
CS Department of Chemical Engineering, College of Engineering, Inha University, Inchon, 402-751, S. Korea
SO Studies in Surface Science and Catalysis (2001), 135(Zeolites and Mesoporous Materials at the Dawn of the 21st Century), 3646-3653
CODEN: SSCTDM; ISSN: 0167-2991
PB Elsevier Science B.V.
DT Journal; (computer optical disk)
LA English
AB The efficiency of unsym. chiral salen ligands in Ti(IV) complex catalysts was examined in the asym. trimethylsilylcyanation of benzaldehyde. High enantioselectivity was attainable over chiral Ti(IV)(salen) complexes prepared from salicylaldehyde and 3,5-Di-tert-butylsalicylaldehyde derivative as
compared to the conventional salen catalyst. Enantiomeric excess of the corresponding reaction product was generally more than 70% over unsym. chiral salen catalysts. The chiral Titanium(IV) salen complexes immobilized on mesoporous MCM-41 zeolite by multi-grafting method showed a relatively high enantioselectivity for the addition of trimethylsilyl cyanide to benzaldehyde.
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 29, 67
ST titanium salen catalyst zeolite support cyanation trimethylsilylcyanide benzaldehyde; asym synthesis trimethylsilylcyanide benzaldehyde titanium salen catalyst

IT Catalyst supports
Enantiomers
(asym. trimethylsilylcyanation of benzaldehyde catalyzed by prepared chiral Ti(salen) complexes immobilized on MCM-41)
IT Cyanation catalysts
(enantioselective; asym. trimethylsilylcyanation of benzaldehyde catalyzed by prepared chiral Ti(salen) complexes immobilized on MCM-41)
IT **Zeolite** MCM-41
RL: CAT (Catalyst use); CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(support; asym. trimethylsilylcyanation of benzaldehyde catalyzed by prepared chiral Ti(salen) complexes immobilized on MCM-41)
IT Schiff bases
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(titanium complexes, chiral; asym. trimethylsilylcyanation of benzaldehyde catalyzed by prepared chiral Ti(salen) complexes immobilized on MCM-41)
IT 203944-13-2DP, reaction products with mercaptopropylsilyl-**functionalized zeolite** 203944-13-2P 259087-67-7DP, reaction products with mercaptopropylsilyl-**functionalized zeolite** 259087-67-7P 403616-93-3DP, reaction products with mercaptopropylsilyl-**functionalized zeolite** 403616-93-3P 403617-61-8DP, reaction products with mercaptopropylsilyl-**functionalized zeolite** 403617-61-8P
RL: CAT (Catalyst use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(asym. trimethylsilylcyanation of benzaldehyde catalyzed by prepared chiral Ti(salen) complexes immobilized on MCM-41)
IT 66985-47-5P 66985-48-6P 120443-82-5P
RL: IMF (Industrial manufacture); PREP (Preparation)
(asym. trimethylsilylcyanation of benzaldehyde catalyzed by prepared chiral Ti(salen) complexes immobilized on MCM-41)
IT 89-98-5, 2-Chlorobenzaldehyde 90-02-8, Salicylaldehyde, reactions 100-52-7, Benzaldehyde, reactions 123-11-5, p-Methoxybenzaldehyde, reactions **546-68-9**, Titanium tetraisopropoxide 999-97-3, Hexamethyldisilazane 4756-00-7, 3-Mercaptopropylsilane 7550-45-0, Titanium tetrachloride, reactions 7677-24-9, Trimethylsilyl cyanide 20439-47-8, (1R,2R)-(-)-1,2-Diaminocyclohexane 29841-69-8, (1S,2S)-(-)-1,2-Diphenylethylenediamine 37942-07-7, 3,5-Di-tert-butylsalicyl aldehyde
RL: RCT (Reactant); RACT (Reactant or reagent)
(asym. trimethylsilylcyanation of benzaldehyde catalyzed by prepared chiral Ti(salen) complexes immobilized on MCM-41)
IT **546-68-9**, Titanium tetraisopropoxide
RL: RCT (Reactant); RACT (Reactant or reagent)
(asym. trimethylsilylcyanation of benzaldehyde catalyzed by prepared chiral Ti(salen) complexes immobilized on MCM-41)
RN 546-68-9 HCAPLUS
CN 2-Propanol, titanium(4+) salt (9CI) (CA INDEX NAME)



●1/4 Ti(IV)

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L64 ANSWER 16 OF 24 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2001:319131 HCAPLUS
DN 135:84154
TI Photochemical pattern transfer and patterning of continuous zeolite films on glass by direct dipping in synthesis gel
AU Ha, Kwang; Lee, Yun-Jo; Chun, Yu Sung; Park, Yong Soo; Lee, Goo Soo; Yoon, Kyung Byung
CS Center for Microcrystal Assembly and Department of Chemistry, Sogang University, Seoul, 121-742, S. Korea
SO Advanced Materials (Weinheim, Germany) (2001), 13(8), 594-596
CODEN: ADVMEW; ISSN: 0935-9648
PB Wiley-VCH Verlag GmbH
DT Journal
LA English
AB The authors demonstrated that photodegrdn. of various organic groups tethered to glass plates is a highly versatile and effective way of preparing glass plates patterned with organic functional groups and that direct dipping of the patterned glass plates into the synthesis gel readily leads to glass plates patterned with continuous zeolite films. The glass plates were prepared with tethered 3-iodopropyl (IP) groups via siloxane linkages. The glass plates with tethered IP groups were then imagewise exposed to UV light through a photomask. After exposure to UV for 1 h, the IP-tethered glass plates were allowed to come into contact with plain ZSM-5 crystals in boiling toluene for 3 h. The SEM image of the glass plates, after sonication for 2 min, revealed that the ZSM 5 crystals were attached only on the masked regions. The image of the zeolite film at higher magnification clearly revealed that the film consists of a monolayer of ZSM-5 crystals. Upon switching from plain ZSM-5 crystals to those with tethered 3-chloropropyl- (or any 3-halopropyl) groups, only the unmasked spots became covered with the monolayers of ZSM-5 crystals. The authors also explored patterning of continuous ZSM-5 films by direct dipping of the glass plates patterned with organic functional groups into the zeolite synthesis gel (tetraethylsilicate/tetrapropylammonium hydroxide/sodium aluminate). The authors found that vividly patterned square ZSM-5 films , after the shape of the grid, were readily achieved by direct dipping of glass plates patterned with Pr (PR) groups into the synthesis gel. It was found that n-octadecyl (OD) and 3-aminopropyl (AP) groups were also highly effective for the direct dipping method, which also worked well for zeolite-A and silicalite-1.
CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
ST photoimaging zeolite film photodegrdn surface org functional group
IT Functional groups
Photoimaging
Photolysis
(preparation of glass plates patterned with continuous zeolite films by imagewise photodegrdn. of organic functional groups tethered to glass plates followed by dipping in zeolite synthesis gel)
IT A zeolites
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(preparation of glass plates patterned with continuous zeolite films by imagewise photodegrdn. of organic functional groups tethered to glass plates followed by dipping in zeolite synthesis gel)
IT Zeolite ZSM-5
RL: PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)

(preparation of glass plates patterned with continuous zeolite films by imagewise photodegrdn. of organic functional groups tethered to glass plates followed by dipping in zeolite synthesis gel)

IT Silicalites (zeolites)
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(silicalite 1; preparation of glass plates patterned with continuous zeolite films by imagewise photodegrdn. of organic functional groups tethered to glass plates followed by dipping in zeolite synthesis gel)

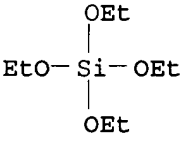
IT 13822-56-5, 3-Aminopropyltrimethoxysilane
RL: NUU (Other use, unclassified); USES (Uses)
(preparation of glass plates patterned with continuous zeolite films by imagewise photodegrdn. of organic functional groups tethered to glass plates followed by dipping in zeolite synthesis gel)

IT 2530-87-2, 3-Chloropropyltrimethoxysilane 14867-28-8, 3-Iodopropyltrimethoxysilane 51826-90-5, 3-Bromopropyltrimethoxysilane
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(preparation of glass plates patterned with continuous zeolite films by imagewise photodegrdn. of organic functional groups tethered to glass plates followed by dipping in zeolite synthesis gel)

IT **78-10-4**, Tetraethylsilicate 1067-25-0 1302-42-7, Sodium aluminate 1313-59-3, Sodium oxide(Na2O), reactions 1344-28-1, Alumina, reactions 3069-42-9, n-Octadecyltrimethoxysilane 4499-86-9, Tetrapropylammonium hydroxide
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(preparation of glass plates patterned with continuous **zeolite** films by imagewise photodegrdn. of organic **functional** groups tethered to glass plates followed by dipping in **zeolite** synthesis gel)

IT **78-10-4**, Tetraethylsilicate
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(preparation of glass plates patterned with continuous **zeolite** films by imagewise photodegrdn. of organic **functional** groups tethered to glass plates followed by dipping in **zeolite** synthesis gel)

RN 78-10-4 HCAPLUS
CN Silicic acid (H4SiO4), tetraethyl ester (8CI, 9CI) (CA INDEX NAME)



RE.CNT 37 THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L64 ANSWER 17 OF 24 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2000:742559 HCAPLUS
DN 134:62150
TI Pore Surface Functionalization of MCM-48 Mesoporous Silica with Tungsten and Molybdenum Metal Centers: Perspectives on Catalytic Peroxide Activation
AU Morey, M. S.; Bryan, J. D.; Schwarz, S.; Stucky, G. D.
CS Chemistry Department, University of California, Santa Barbara, CA, 93106, USA
SO Chemistry of Materials (2000), 12(11), 3435-3444

CODEN: CMATEX; ISSN: 0897-4756
PB American Chemical Society
DT Journal
LA English
AB The pore surface of MCM-48 mesoporous silica was functionalized with tungsten and molybdenum metal centers by the anhydrous reaction of metal alkoxides with surface silanol groups. Resulting metal-oxo species were attached via covalent M-O-Si bonds as confirmed with photoacoustic (PAS)-FTIR. Diffuse reflectance UV-visible spectroscopy indicates that the metal oxo groups are predominantly comprised of tetrahedral and octahedral coordinated monomers. MCM-48 grafted with Mo and W is active for brominating phenol red with hydrogen peroxide at neutral pH in a manner similar to Ti-MCM-48, as we reported earlier. The rates of bromination for Mo, W, and four other metals, after normalization for metal concentration, measured as absorption peak intensities of the resultant bromophenol blue, are as follows: 50p46:16:2.8p1:0 W:Mo:Ti:Zr:V:Re. The different rates of reactivity, and hence the general degree of metal-peroxo activation, can be explained on the basis of size, charge, coordination sphere, and electronegativity of the central metal.
CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 22, 66
ST tungsten pore surface **functionalization** MCM 48 **zeolite** ; molybdenum pore surface **functionalization** MCM 48 **zeolite**; catalytic peroxide activation tungsten molybdenum MCM 48 zeolite; phenol red bromination tungsten molybdenum MCM 48 zeolite
IT Bromination catalysts
Bromination kinetics
(for phenol red; pore surface functionalization of MCM-48 mesoporous silica with tungsten and molybdenum metal centers and perspectives on catalytic peroxide activation)
IT Pore
Surface reaction
(pore surface functionalization of MCM-48 mesoporous silica with tungsten and molybdenum metal centers and perspectives on catalytic peroxide activation)
IT Transition metals, uses
RL: CAT (Catalyst use); PRP (Properties); USES (Uses)
(pore surface functionalization of MCM-48 mesoporous silica with tungsten and molybdenum metal centers and perspectives on catalytic peroxide activation)
IT MCM **zeolites**
RL: CAT (Catalyst use); PRP (Properties); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(pore surface **functionalization** of MCM-48 mesoporous silica with tungsten and molybdenum metal centers and perspectives on catalytic peroxide activation)
IT Metal alkoxides
Peroxides, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(pore surface functionalization of MCM-48 mesoporous silica with tungsten and molybdenum metal centers and perspectives on catalytic peroxide activation)
IT 143-74-8, Phenol red
RL: RCT (Reactant); RACT (Reactant or reagent)
(bromination of; pore surface functionalization of MCM-48 mesoporous silica with tungsten and molybdenum metal centers and perspectives on catalytic peroxide activation)
IT 7439-98-7, Molybdenum, uses 7440-15-5, Rhenium, uses 7440-32-6, Titanium, uses 7440-33-7, Tungsten, uses 7440-62-2, Vanadium, uses 7440-67-7, Zirconium, uses

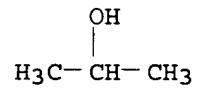
RL: CAT (Catalyst use); PRP (Properties); USES (Uses)
(pore surface functionalization of MCM-48 mesoporous silica with tungsten and molybdenum metal centers and perspectives on catalytic peroxide activation)

IT 7631-86-9, Silica, uses
RL: CAT (Catalyst use); PRP (Properties); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(pore surface functionalization of MCM-48 mesoporous silica with tungsten and molybdenum metal centers and perspectives on catalytic peroxide activation)

IT **546-68-9**, Titanium tetraisopropoxide 5588-84-1, Triisopropoxyvanadium oxide 7722-84-1, Hydrogen peroxide, reactions 23519-77-9, Zirconium tetrapropoxide 26143-11-3, Tungsten pentaethoxide 74060-96-1
RL: RCT (Reactant); RACT (Reactant or reagent)
(pore surface functionalization of MCM-48 mesoporous silica with tungsten and molybdenum metal centers and perspectives on catalytic peroxide activation)

IT **546-68-9**, Titanium tetraisopropoxide
RL: RCT (Reactant); RACT (Reactant or reagent)
(pore surface functionalization of MCM-48 mesoporous silica with tungsten and molybdenum metal centers and perspectives on catalytic peroxide activation)

RN 546-68-9 HCAPLUS
CN 2-Propanol, titanium(4+) salt (9CI) (CA INDEX NAME)



●1/4 Ti(IV)

RE.CNT 62 THERE ARE 62 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L64 ANSWER 18 OF 24 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2000:361323 HCAPLUS
DN 133:152240
TI Use of Delaminated Zeolites (ITQ-2) and Mesoporous Molecular Sieves in the Production of Fine Chemicals: Preparation of Dimethylacetals and Tetrahydropyranylation of Alcohols and Phenols
AU Rodriguez, I.; Climent, M. J.; Iborra, S.; Fornes, V.; Corma, A.
CS Instituto de Tecnologia Quimica (UPV-CSIC), Universidad Politecnica de Valencia, Valencia, 46022, Spain
SO Journal of Catalysis (2000), 192(2), 441-447
CODEN: JCTLA5; ISSN: 0021-9517
PB Academic Press
DT Journal
LA English
AB Protection of aldehydes by formation of the corresponding di-Me acetals and protection of alcs. and phenols by formation of the corresponding tetrahydropyranyl ethers have been carried out successfully using ITQ-2 zeolite as acid catalyst. Its catalytic activity for these reactions is compared with those obtained with MCM-22, Beta zeolites, and the mesoporous aluminosilicate MCM-41, all of them with similar Si/Al ratios. The results obtained indicate that when the reactions involve bulky

reactants, ITQ-2 shows, in all cases, the highest activity as a consequence of the combination of its delaminated structure and the presence of strong acid sites. (c) 2000 Academic Press.

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 67

ST zeolite delaminated acetalization tetrahydropyranylation catalyst prepn; aldehyde alc phenol protection fine chem; tetrahydropyranylation acetalization catalyst mesoporous mol sieve

IT Alcohols, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(benzyl alc., cyclohexanol, menthol, cholesterol; preparation and use of delaminated zeolites (ITQ-2) and mesoporous mol. sieves as acetalization and/or tetrahydropyranylation catalyst to protect functional groups in production of fine chems.)

IT Aldehydes, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(heptanal, 2-phenylpropanal, diphenylacetaldehyde; preparation and use of delaminated zeolites (ITQ-2) and mesoporous mol. sieves as acetalization and/or tetrahydropyranylation catalyst to protect functional groups in production of fine chems.)

IT Crystal structure
Surface area
(in preparation and use of delaminated zeolites (ITQ-2) and mesoporous mol. sieves as acetalization and/or tetrahydropyranylation catalyst to protect functional groups in production of fine chems.)

IT Phenols, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(phenol, naphthol; preparation and use of delaminated zeolites (ITQ-2) and mesoporous mol. sieves as acetalization and/or tetrahydropyranylation catalyst to protect functional groups in production of fine chems.)

IT Acetalization catalysts
(preparation and use of delaminated zeolites (ITQ-2) and mesoporous mol. sieves as acetalization and/or tetrahydropyranylation catalyst to protect functional groups in production of fine chems.)

IT Aluminosilicates, uses
RL: CAT (Catalyst use); PRP (Properties); USES (Uses)
(preparation and use of delaminated zeolites (ITQ-2) and mesoporous mol. sieves as acetalization and/or tetrahydropyranylation catalyst to protect functional groups in production of fine chems.)

IT Beta zeolites
Zeolite MCM-22
Zeolite MCM-41
Zeolites (synthetic), preparation
RL: CAT (Catalyst use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(preparation and use of delaminated zeolites (ITQ-2) and mesoporous mol. sieves as acetalization and/or tetrahydropyranylation catalyst to protect functional groups in production of fine chems.)

IT 57-88-5, Cholesterol, reactions 100-51-6, Benzyl alcohol, reactions 108-93-0, Cyclohexanol, reactions 1490-04-6, Menthol
RL: RCT (Reactant); RACT (Reactant or reagent)
(alc.; preparation and use of delaminated zeolites (ITQ-2) and mesoporous mol. sieves as acetalization and/or tetrahydropyranylation catalyst to protect functional groups in production of fine chems.)

IT 7631-86-9, Aerosil 200, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(colloidal; in preparation and use of delaminated zeolites (ITQ-2) and mesoporous mol. sieves as acetalization and/or tetrahydropyranylation catalyst to protect functional groups in production of fine chems.)

IT **57-09-0**, Hexadecyltrimethylammonium bromide 111-49-9

1310-73-2, Sodium hydroxide, uses 4499-86-9, Tetrapropylammonium hydroxide
RL: NUU (Other use, unclassified); USES (Uses)
(in preparation and use of delaminated **zeolites** (ITQ-2) and mesoporous mol. sieves as acetalization and/or tetrahydropyranylation catalyst to protect **functional** groups in production of fine chems.)

IT 1302-42-7, Sodium aluminate
RL: RCT (Reactant); RACT (Reactant or reagent)
(in preparation and use of delaminated zeolites (ITQ-2) and mesoporous mol. sieves as acetalization and/or tetrahydropyranylation catalyst to protect functional groups in production of fine chems.)

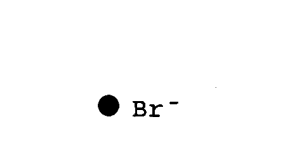
IT 159995-97-8, Aluminum silicon oxide
RL: CAT (Catalyst use); PRP (Properties); USES (Uses)
(preparation and use of delaminated zeolites (ITQ-2) and mesoporous mol. sieves as acetalization and/or tetrahydropyranylation catalyst to protect functional groups in production of fine chems.)

IT 110-87-2, 3,4-Dihydro-2H-pyran 149-73-5, Trimethyl orthoformate
RL: NUU (Other use, unclassified); USES (Uses)
(preparation and use of delaminated zeolites (ITQ-2) and mesoporous mol. sieves as acetalization and/or tetrahydropyranylation catalyst to protect functional groups in production of fine chems.)

IT 93-53-8, 2-Phenylpropanal 108-95-2, Phenol, reactions 111-71-7, Heptanal 135-19-3, 2-Naphthol, reactions 947-91-1, Diphenylacetaldehyde
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation and use of delaminated zeolites (ITQ-2) and mesoporous mol. sieves as acetalization and/or tetrahydropyranylation catalyst to protect functional groups in production of fine chems.)

IT **57-09-0**, Hexadecyltrimethylammonium bromide
RL: NUU (Other use, unclassified); USES (Uses)
(in preparation and use of delaminated **zeolites** (ITQ-2) and mesoporous mol. sieves as acetalization and/or tetrahydropyranylation catalyst to protect **functional** groups in production of fine chems.)

RN 57-09-0 HCAPLUS
CN 1-Hexadecanaminium, N,N,N-trimethyl-, bromide (9CI) (CA INDEX NAME)



RE.CNT 56 THERE ARE 56 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L64 ANSWER 19 OF 24 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2000:7668 HCAPLUS
DN 132:171525
TI The role of surface chemistry in zeolite membrane formation
AU Hang Chau, J. L.; Tellez, C.; Yeung, K. L.; Ho, K.
CS Department of Chemical Engineering, The Hong Kong University of Science and Technology, Kowloon, Hong Kong
SO Journal of Membrane Science (2000), 164(1-2), 257-275
CODEN: JMESDO; ISSN: 0376-7388
PB Elsevier Science B.V.

DT Journal
LA English
AB The structure and chemical of support materials play an important role in zeolite film formation and have a significant influence on the separation property of the membrane material. Surface roughness and pore size define the optimum zeolite crystal size and membrane thickness. The chemical nature of the support surface influences zeolite nucleation, crystal growth and film adhesion. Chemical modification of the support surface can significantly alter the zeolite film formation. Ultrathin layers (20 nm) of metal and metal oxides were deposited onto porous stainless steel support. This method gives highly reproducible film microstructure and has a good potential for large-scale application for zeolite membrane production The effects of surface functional groups (-SiO2, -OH and -COOH) were simulated using adsorbed surfactants. The influence of aging and seeding on zeolite film formation also were studied.
CC 66-3 (Surface Chemistry and Colloids)
Section cross-reference(s): 75
ST zeolite membrane formation stainless steel support chem modification
IT Thermal aging
(effects of aging on zeolite membrane formation)
IT Surfactants
(effects of surface functional groups on zeolite membrane formation studied by modifying stainless steel support with adsorbed surfactants)
IT Thickness
(film; of zeolite membrane on metal and metal oxide-coated stainless steel)
IT Surface structure
(of zeolite membrane on metal and metal oxide-coated stainless steel)
IT Crystallization
Films
Membranes, nonbiological
(role of structure and chemical of support surface in zeolite membrane formation studied by modifying stainless steel support)
IT Silicalites (zeolites)
Zeolites (synthetic), properties
RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); FORM (Formation, nonpreparative); PROC (Process); USES (Uses)
(role of structure and chemical of support surface in zeolite membrane formation studied by modifying stainless steel support)
IT Functional groups
(surface; effects of surface functional groups on zeolite membrane formation studied by modifying stainless steel support with adsorbed surfactants)
IT Composition
(surface; of neat, metal-coated, and metal oxide-coated stainless steel)
IT 107-96-0, 3-Mercaptopropionic acid **4420-74-0**, 3-Mercaptopropyl trimethoxysilane 19721-22-3, 3-Mercapto-1-propanol
RL: NUU (Other use, unclassified); USES (Uses)
(effects of surface **functional** groups on **zeolite** membrane formation studied by modifying stainless steel support with adsorbed surfactants)
IT 106-97-8, n-Butane, properties 7440-59-7, Helium, properties 7727-37-9, Nitrogen, properties
RL: PRP (Properties)
(gas permeabilities across zeolite membrane on metal-coated stainless steel)
IT 12597-68-1, Stainless steel, properties
RL: PRP (Properties)

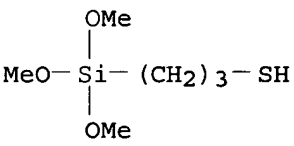
(role of structure and chemical of support surface in zeolite membrane formation studied by modifying stainless steel support)

IT 1309-37-1, Ferric oxide, uses 1344-28-1, Alumina, uses 7439-89-6, Iron, uses 7440-22-4, Silver, uses 7440-47-3, Chromium, uses 7440-57-5, Gold, uses 7631-86-9, Silica, uses 13463-67-7, Titania, uses
RL: NUU (Other use, unclassified); USES (Uses)
(role of structure and chemical of support surface in zeolite membrane formation studied using metal and metal oxide-coated stainless steel)

IT **4420-74-0**, 3-Mercaptopropyl trimethoxysilane
RL: NUU (Other use, unclassified); USES (Uses)
(effects of surface **functional** groups on **zeolite** membrane formation studied by modifying stainless steel support with adsorbed surfactants)

RN 4420-74-0 HCAPLUS

CN 1-Propanethiol, 3-(trimethoxysilyl)- (7CI, 8CI, 9CI) (CA INDEX NAME)



RE.CNT 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L64 ANSWER 20 OF 24 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1999:754526 HCAPLUS

DN 132:131217

TI Organic-functionalized molecular sieves (OFMSs): II. Synthesis, characterization and the transformation of OFMSs containing non-polar functional groups into solid acids

AU Jones, C. W.; Tsuji, K.; Davis, M. E.

CS Division of Chemistry and Chemical Engineering, California Institute of Technology, Pasadena, CA, USA

SO Microporous and Mesoporous Materials (1999), 33(1-3), 223-240
CODEN: MIMMFJ; ISSN: 1387-1811

PB Elsevier Science B.V.

DT Journal

LA English

AB Organic-functionalized mol. sieves (OFMSs) with a beta-type structure (*BEA) containing intracryst. phenethyl (PE) groups were synthesized and characterized by x-ray diffraction, TGA, FT Raman spectroscopy, 29Si, 13C and 27Al solid-state NMR spectroscopy, XPS, bulk elemental anal., SEM and physisorption techniques. The OFMSs were synthesized from monomeric Si sources such as tetraethylorthosilicate and phenethyltrimethoxysilane and via the solid-state conversion of extracted, PE-functionalized MCM-41. Occluded structure-directing agent (tetraethylammonium fluoride; TEAF) is removed by solvent extraction techniques. By varying the extraction conditions, OFMSs with varying hydrophobicity and porosity were synthesized. Bulk and surface elemental anal. indicate that there is an even distribution of organic functionalities throughout the material at levels of PE incorporation <5% (Si basis). The phenethyl groups are sulfonated using SO3 vapor to produce a microporous solid containing intracryst. sulfonic acids.

CC 78-4 (Inorganic Chemicals and Reactions)

ST zeolite beta org functionalized prepn Raman; sulfonation phenethyl functionalized beta zeolite; phenethyl functionalized beta zeolite prepn

NMR Raman sulfonation; porosity phenethyl functionalized beta zeolite; hydrophobicity phenethyl functionalized beta zeolite

IT NMR (nuclear magnetic resonance)
(multinuclear; of phenethyl functionalized beta zeolites)

IT Raman spectra
(of organic functionalized beta zeolites)

IT Porosity
Sulfonation
(of phenethyl functionalized beta zeolites)

IT Beta zeolites
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(organic functionalized; preparation and FT Raman spectra)

IT Zeolite MCM-41
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(phenethyl functionalized; for preparation of beta mol. sieves containing non-polar functional groups)

IT Beta zeolites
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(phenethyl functionalized; preparation, multinuclear NMR and FT Raman spectra, porosity, hydrophobicity and sulfonation of)

IT **78-10-4**, Tetraethylorthosilicate **4420-74-0** 57813-67-9
67592-36-3
RL: RCT (Reactant); RACT (Reactant or reagent)
(for preparation of organic **functionalized** beta **zeolites**)

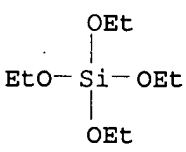
IT 49539-88-0, Phenethyltrimethoxysilane
RL: RCT (Reactant); RACT (Reactant or reagent)
(for preparation of phenethyl functionalized beta zeolites)

IT 8014-95-7, Oleum
RL: RCT (Reactant); RACT (Reactant or reagent)
(for sulfonation of organic functionalized beta zeolites)

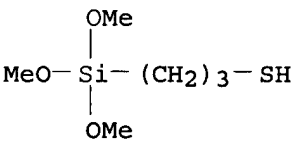
IT 665-46-3, Tetraethylammonium fluoride
RL: NUU (Other use, unclassified); USES (Uses)
(template; for preparation of organic functionalized beta zeolites)

IT **78-10-4**, Tetraethylorthosilicate **4420-74-0**
RL: RCT (Reactant); RACT (Reactant or reagent)
(for preparation of organic **functionalized** beta **zeolites**)

RN 78-10-4 HCAPLUS
CN Silicic acid (H4SiO4), tetraethyl ester (8CI, 9CI) (CA INDEX NAME)



RN 4420-74-0 HCAPLUS
CN 1-Propanethiol, 3-(trimethoxysilyl)- (7CI, 8CI, 9CI) (CA INDEX NAME)



RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

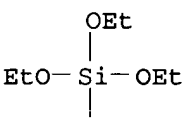
L64 ANSWER 21 OF 24 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1999:446974 HCAPLUS
DN 131:178792
TI Organic-functionalized molecular sieves (OFMSs) I. Synthesis and characterization of OFMSs with polar functional groups
AU Tsuji, Katsuyuki; Jones, Christopher W.; Davis, Mark E.
CS Chemical Engineering, California Institute of Technology, Pasadena, CA, 91125, USA
SO Microporous and Mesoporous Materials (1999), 29(3), 339-349
CODEN: MIMMFJ; ISSN: 1387-1811
PB Elsevier Science B.V.
DT Journal
LA English
AB Organic-functionalized mol. sieves that contain polar functional groups were synthesized and characterized. Small, uniform-sized crystals with the BEA topol. were obtained when Et4NF was used as a structure-directing agent and added at the initiation of (EtO)4Si/organosilane hydrolysis. An aminopropyl-functionalized material with the BEA topol. was prepared and characterized by x-ray diffraction, solid-state NMR spectroscopy, Raman spectroscopy and diffuse reflectance UV-visible spectroscopy. The aminopropyl groups are located within the intracryst. void space and that they can be reacted with aldehydes to form occluded imines.
CC 78-4 (Inorganic Chemicals and Reactions)
Section cross-reference(s): 75
ST beta zeolite org functionalized prepn; aldehyde reaction beta zeolite aminopropyl functionalized; imine formation inclusion beta zeolite aminopropyl functionalized
IT Beta zeolites
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(aminopropyl functionalized; preparation and reaction with aldehydes)
IT Beta zeolites
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(organic functionalized; preparation and reaction with aldehydes)
IT Imines
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of imines occluded in aminopropyl functionalized beta zeolites from aldehydes)
IT Aldehydes, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with aminopropyl functionalized beta zeolites)
IT **78-10-4**, Silicon tetraethoxide 13822-56-5, Aminopropyltrimethoxysilane
RL: RCT (Reactant); RACT (Reactant or reagent)
(reactant for preparation of aminopropyl **functionalized** beta **zeolites**)
IT 2526-62-7, 2-Cyanoethyltrimethoxysilane 2530-86-1, 3-(Dimethylamino)propyltrimethoxysilane 2551-83-9, Allyltrimethoxysilane **4420-74-0**, 3-Mercaptopropyltrimethoxysilane 14867-28-8, 3-Iodopropyltrimethoxysilane 49539-88-0, Phenethyltrimethoxysilane 51826-90-5, 3-Bromopropyltrimethoxysilane 126519-89-9, 2-(4-Chlorosulfonylphenyl)ethyltrimethoxysilane
RL: RCT (Reactant); RACT (Reactant or reagent)
(reactant for preparation of organic **functionalized** beta **zeolites**)
IT 100-10-7, 4-(Dimethylamino)benzaldehyde 1971-81-9, 4-(Dimethylamino)-1-

naphthaldehyde
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with aminopropyl functionalized beta zeolites with formation of occluded imines)

IT 665-46-3, Tetraethylammonium fluoride
RL: NUU (Other use, unclassified); USES (Uses)
(template for preparation of aminopropyl functionalized beta zeolites)

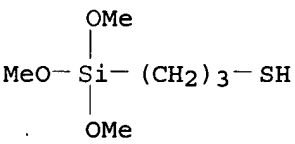
IT **78-10-4**, Silicon tetraethoxide
RL: RCT (Reactant); RACT (Reactant or reagent)
(reactant for preparation of aminopropyl **functionalized** beta **zeolites**)

RN 78-10-4 HCAPLUS
CN Silicic acid (H4SiO4), tetraethyl ester (8CI, 9CI) (CA INDEX NAME)



IT **4420-74-0**, 3-Mercaptopropyltrimethoxysilane
RL: RCT (Reactant); RACT (Reactant or reagent)
(reactant for preparation of organic **functionalized** beta **zeolites**)

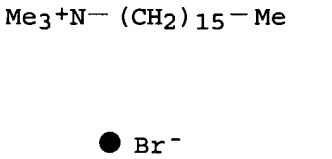
RN 4420-74-0 HCAPLUS
CN 1-Propanethiol, 3-(trimethoxysilyl)- (7CI, 8CI, 9CI) (CA INDEX NAME)



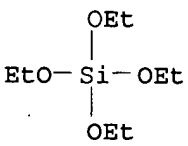
RE.CNT 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L64 ANSWER 22 OF 24 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1998:544952 HCAPLUS
DN 129:285127
TI Covalent coupling of an organic chromophore into functionalized MCM-41 mesophases by template-directed co-condensation
AU Fowler, Christabel E.; Mann, Stephen; Lebeau, Benedicte
CS Department of Chemistry, University of Bath, Bath, BA2 7AY, UK
SO Chemical Communications (Cambridge) (1998), (17), 1825-1826
CODEN: CHCOFS; ISSN: 1359-7345
PB Royal Society of Chemistry
DT Journal
LA English
AB An ordered organo-SiO2-surfactant mesophase containing a covalently-linked chromophore was synthesized with MCM-41-type architecture by template-directed co-condensation of tetraethoxysilane and 3-(2,4-dinitrophenylamino)propyl(triethoxy)silane. A dye-functionalized mesoporous SiO2 with hexagonal order was produced by surfactant extraction of the as-synthesized material prepared under acidic conditions. The preparation pH
controlled the ability to obtain the mesophase product.

CC 78-4 (Inorganic Chemicals and Reactions)
ST zeolite MCM41 dinitrophenylaminopropyltriethoxysilane chromophore bonded prepn; nitrophenylaminopropyltriethoxysilane chromophore zeolite MCM41 bonded prepn; condensation direct synthesis zeolite dinitrophenylaminopropyltriethoxysilane chromophore; dye functionalized zeolite MCM41 direct synthesis; pH zeolite dinitrophenylaminopropyltrietho xysilane chromophore bonded prepn
IT Zeolite MCM-41
RL: SPN (Synthetic preparation); PREP (Preparation)
((dinitrophenylamino)propyl(triethoxy)silane compound; direct synthesis of mesoporous MCM-41 with covalently-linked organic dye)
IT Bond
(covalent; direct synthesis of mesoporous zeolite MCM-41 with covalently-linked organic dye)
IT Dyes
(direct synthesis of mesoporous zeolite MCM-41 with covalently-linked (dinitrophenylamino)propyl(triethoxy)silane)
IT **57-09-0**, Hexadecyltrimethylammonium bromide
RL: NUU (Other use, unclassified); USES (Uses)
(for preparation of covalently-linked dye-**functionalized zeolite** MCM-41)
IT **78-10-4**, TEOS 133787-88-9
RL: RCT (Reactant); RACT (Reactant or reagent)
(for preparation of covalently-linked dye-**functionalized zeolite** MCM-41)
IT 133787-88-9DP, zeolite MCM-41 compound
RL: SPN (Synthetic preparation); PREP (Preparation)
(for preparation of covalently-linked dye-functionalized zeolite MCM-41)
IT **57-09-0**, Hexadecyltrimethylammonium bromide
RL: NUU (Other use, unclassified); USES (Uses)
(for preparation of covalently-linked dye-**functionalized zeolite** MCM-41)
RN 57-09-0 HCAPLUS
CN 1-Hexadecanaminium, N,N,N-trimethyl-, bromide (9CI) (CA INDEX NAME)



IT **78-10-4**, TEOS
RL: RCT (Reactant); RACT (Reactant or reagent)
(for preparation of covalently-linked dye-**functionalized zeolite** MCM-41)
RN 78-10-4 HCAPLUS
CN Silicic acid (H4SiO4), tetraethyl ester (8CI, 9CI) (CA INDEX NAME)



RE.CNT 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD

KATHLEEN FULLER EIC 1700 REMSON 4B28 571/272-2505

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L64 ANSWER 23 OF 24 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1998:539320 HCAPLUS
DN 129:277632
TI Sulfonic acid bearing mesoporous materials as catalysts in furan and polyol derivatization
AU Van Rhijn, W.; De Vos, D.; Bossaert, W.; Bullen, J.; Wouters, B.; Grobet, P.; Jacobs, P.
CS Center for Surface Science and Catalysis, KULeuven, Heverlee, B-3001, Belg.
SO Studies in Surface Science and Catalysis (1998), 117(Mesoporous Molecular Sieves 1998), 183-190
CODEN: SSCTDM; ISSN: 0167-2991
PB Elsevier Science B.V.
DT Journal
LA English
AB Acid catalysts were obtained by incorporation of propanesulfonic acid groups into MCM [mesoporous crystalline material] and HMS siliceous mesoporous zeolite structures, with HS-(CH2)3-Si(OR')3 as the building block. Synthesis routes were sol-gel processing of TEOS and HS-(CH2)3-Si(OMe)3 in the presence of an ionic or neutral template, or silylation of a pre-synthesized MCM support. The surface modification with -(CH2)3-SO3H was assessed with 13C-NMR, IR, sorption measurements and TGA. The materials were evaluated as catalysts in formation of 2,2-[bis-(5-methylfuryl)]propane by condensation of methylfuran (MF) and acetone. With propylsulfonic acid MCMs, furan oligomerization is largely circumvented and furan-based yields are increased from 40% (for H-β) to over 80%. In esterification of sorbitol with long fatty acids, zeolites are hardly active; however, at the hydrophobic surface of the propylsulfonic acid MCMs, both reactant phases are brought into intimate contact and this results in considerable catalytic activity.
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 67
ST mesoporous cryst siliceous material sulfonated catalyst; hydroxyalkylation condensation methylfuran acetone mesoporous catalyst; esterification sorbitol fatty acid mesoporous catalyst; zeolite mesoporous siliceous material catalyst
IT Porous materials
(mesoporous; sulfonic acid functionalized mesoporous zeolite catalysts in condensation of furan and acetone and esterification of sorbitol with fatty acids)
IT High-silica zeolites
MCM zeolites
RL: CAT (Catalyst use); USES (Uses)
(propylsulfonated; sulfonic acid functionalized mesoporous zeolite catalysts in condensation of furan and acetone and esterification of sorbitol with fatty acids)
IT Alkylation catalysts
Condensation reaction catalysts
Esterification catalysts
Hydroxylation catalysts
Silylation
Sol-gel processing
(sulfonic acid functionalized mesoporous zeolite catalysts in condensation of furan and acetone and esterification of sorbitol with fatty acids)
IT Siliceous materials
RL: CAT (Catalyst use); USES (Uses)
(sulfonic acid functionalized mesoporous zeolite catalysts in

condensation of furan and acetone and esterification of sorbitol with fatty acids)

IT Fatty acids, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(sulfonic acid functionalized mesoporous zeolite catalysts in condensation of furan and acetone and esterification of sorbitol with fatty acids)

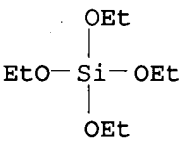
IT 28553-80-2D, Propanesulfonic acid, siliceous derivs.
RL: CAT (Catalyst use); USES (Uses)
(sulfonic acid functionalized mesoporous zeolite catalysts in condensation of furan and acetone and esterification of sorbitol with fatty acids)

IT 49555-48-8P, Isosorbide dilaurate 59212-75-8P, 2,2-[Bis-(5-methylfuryl)]propane
RL: IMF (Industrial manufacture); PREP (Preparation)
(sulfonic acid functionalized mesoporous zeolite catalysts in condensation of furan and acetone and esterification of sorbitol with fatty acids)

IT 50-70-4, Sorbitol, reactions 67-64-1, Acetone, reactions **78-10-4**, TEOS 110-00-9, Furan 143-07-7, Lauric acid, reactions 27137-41-3, Methylfuran
RL: RCT (Reactant); RACT (Reactant or reagent)
(sulfonic acid **functionalized** mesoporous **zeolite** catalysts in condensation of furan and acetone and esterification of sorbitol with fatty acids)

IT **78-10-4**, TEOS
RL: RCT (Reactant); RACT (Reactant or reagent)
(sulfonic acid **functionalized** mesoporous **zeolite** catalysts in condensation of furan and acetone and esterification of sorbitol with fatty acids)

RN 78-10-4 HCAPLUS
CN Silicic acid (H4SiO4), tetraethyl ester (8CI, 9CI) (CA INDEX NAME)



RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L64 ANSWER 24 OF 24 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1993:176848 HCAPLUS
DN 118:176848
TI Method for functionalizing synthetic mesoporous crystalline material
IN Beck, Jeffrey S.; Calabro, David C.; McCullen, Sharon B.; Pelrine, Bruce P.; Schmitt, Kirk D.; Vartuli, James C.
PA Mobil Oil Corp., USA
SO U.S., 15 pp. Cont.-in-part of U.S. 5,098,684.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 13

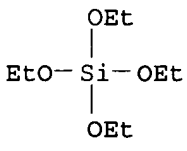
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5145816	A	19920908	US 1991-718056	19910620
	US 5102643	A	19920407	US 1990-470008	19900125

	US 5057296	A	19911015	US 1990-625171	19901210
	US 5098684	A	19920324	US 1990-625245	19901210
	EP 533312	A1	19930324	EP 1992-304525	19920519
	EP 533312	B1	19980422		
	R: BE, DE, DK, FR, GB, IT, NL, SE				
	AU 9216396	A1	19921224	AU 1992-16396	19920520
	AU 648166	B2	19940414		
	CA 2069722	AA	19921221	CA 1992-2069722	19920527
	CA 2069722	C	20021217		
	US 5200058	A	19930406	US 1992-895283	19920608
	KR 205979	B1	19990701	KR 1992-10496	19920617
	JP 05254827	A2	19931005	JP 1992-160804	19920619
	JP 3443428	B2	20030902		
	US 5220101	A	19930615	US 1992-918322	19920722
	US 5378440	A	19950103	US 1993-16402	19930211
PRAI	US 1990-470008	A2	19900125		
	US 1990-625171	A2	19901210		
	US 1990-625245	A2	19901210		
	US 1991-718056	A	19910620		
	US 1992-918322	A2	19920722		

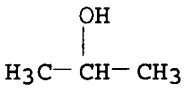
OS MARPAT 118:176848

AB A method is described for modifying an ultra-large pore crystalline material by contacting with a treatment composition M'X'Y'n where M' is an element of Groups IIA, IVA, VA, VIA, IB, IIB, IVB, VB, or VIB; X' is halide, hydride, alkoxide of C1-6, or acetate; Y' is X or phosphine, sulfide, carbonyl or cyano; and n = 1-5. The contacted crystalline material becomes functionalized. The functionalized material is also described and can be used as a sorbent or catalyst component.

IC ICM B01J029-04
INCL 502060000
CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 35, 66
ST functionalized mesoporous cryst catalyst sorbent
IT **Zeolites**, uses
RL: USES (Uses)
(**functionalization** of catalysts and sorbents of)
IT Catalysts and Catalysis
Sorbents
(**zeolite**, **functionalization** of)
IT Polymerization catalysts
(oligomerization, **zeolite**, **functionalization** of)
IT 75-77-4, uses **78-10-4**, Tetraethylorthosilicate 121-43-7, Trimethylborate **555-31-7**, Aluminum isopropoxide **681-84-5**, Tetramethylorthosilicate 872-05-9, 1-Decene 999-97-3, Hexamethyldisilazane **2269-22-9**, Aluminum tri-sec-butoxide **3087-36-3**, Titanium tetraethoxide 10103-47-6 13774-81-7, Ammonia-borane 14044-65-6, Borane-tetrahydrofuran 17593-70-3, Chromium acetate 55671-55-1 82887-05-6 147023-11-8
RL: USES (Uses)
(**functionalization** of **zeolites** and sorbents by)
IT **78-10-4**, Tetraethylorthosilicate **555-31-7**, Aluminum isopropoxide **681-84-5**, Tetramethylorthosilicate **2269-22-9**, Aluminum tri-sec-butoxide **3087-36-3**, Titanium tetraethoxide
RL: USES (Uses)
(**functionalization** of **zeolites** and sorbents by)
RN 78-10-4 HCAPLUS
CN Silicic acid (H4SiO4), tetraethyl ester (8CI, 9CI) (CA INDEX NAME)

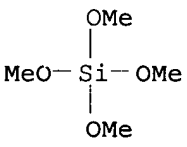


RN 555-31-7 HCAPLUS
CN 2-Propanol, aluminum salt (9CI) (CA INDEX NAME)

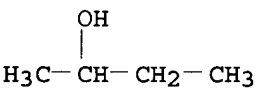


●1/3 Al

RN 681-84-5 HCAPLUS
CN Silicic acid (H4SiO4), tetramethyl ester (8CI, 9CI) (CA INDEX NAME)

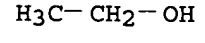


RN 2269-22-9 HCAPLUS
CN 2-Butanol, aluminum salt (9CI) (CA INDEX NAME)



●1/3 Al

RN 3087-36-3 HCAPLUS
CN Ethanol, titanium(4+) salt (9CI) (CA INDEX NAME)



●1/4 Ti(IV)

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